VOL. XXXIX. No. 2 FEBRUARY 1954

MECCANO MAGAZINE

NIGHT SORTIE AT WEST MALLING

1/-

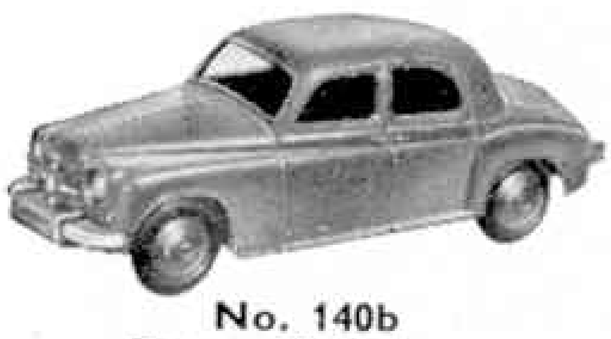
DINKY TOYS

TRADE MARK REGD.

No. 25y
Universal Jeep
3/3

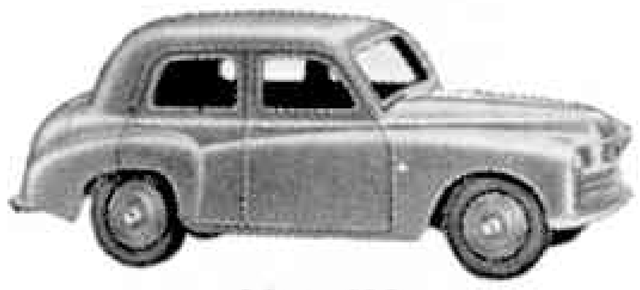
No. 31c
Trojan Van, 15 cwt.
Length 3⅜ in. **2/2**

No. 30j
Austin Wagon
Length 4⅛ in. **2/6**



No. 140b
Rover 75 Saloon
Length 3⅞ in. **2/5**

No. 139b
Hudson "Commodore" Sedan
Length 4⅛ in. **2/8**



No. 40f
Hillman "Minx"
Length 3⅜ in. **2/2**

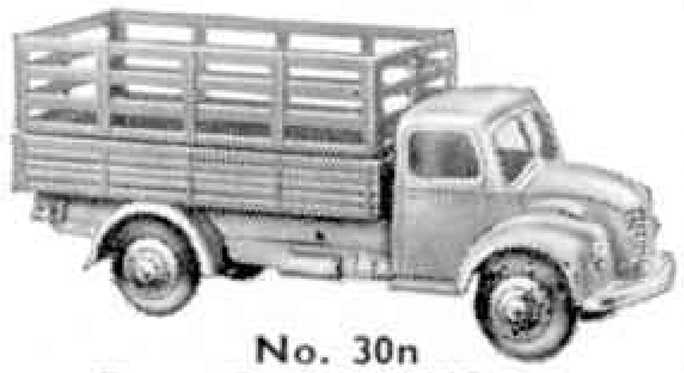
No. 29h
Duple Roadmaster Coach
Length 4⅛ in. **3/6**

No. 40e
Standard Vanguard Saloon
2/2

No. 30h
Daimler Ambulance
Length 3¾ in. **2/8**

No. 30r
Fordson "Thames" Flat Truck
Length 4⅛ in. **2/4**

No. 25x
Breakdown Lorry
Length 4¾ in. **4/11**



No. 30n
Farm Produce Wagon
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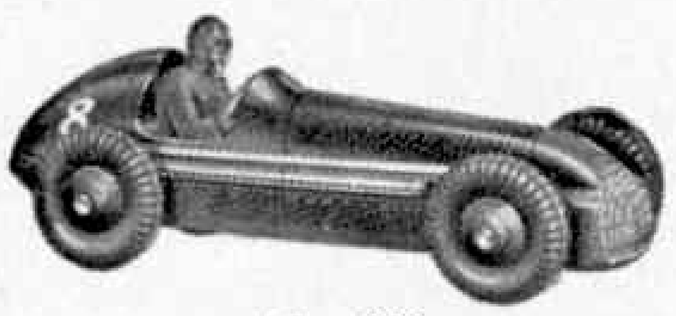
No. 23j
H.W.M. Racing Car
Length 3⅞ in. **2/6**

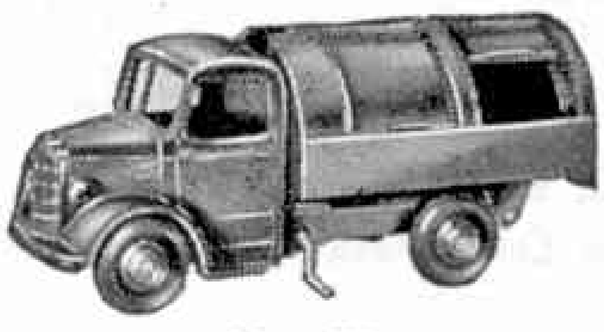
No. 23g
Cooper-Bristol Racing Car
Length 3½ ins. **2/6**

No. 140a
Austin "Atlantic" Convertible
Length 3⅜ in. **2/8**

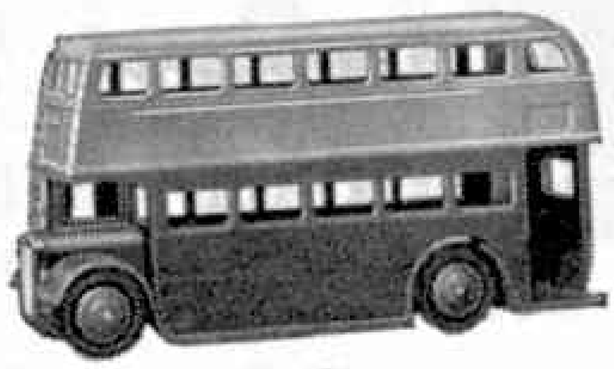
No. 23h
Ferrari Racing Car
Length 4 in. **2/6**



No. 23f
Alfa Romeo Racing Car
2/6



No. 25v
Refuse Wagon
Length 4¼ in. **5/6**



No. 29c
Double Deck Bus
Length 4 in. **3/9**

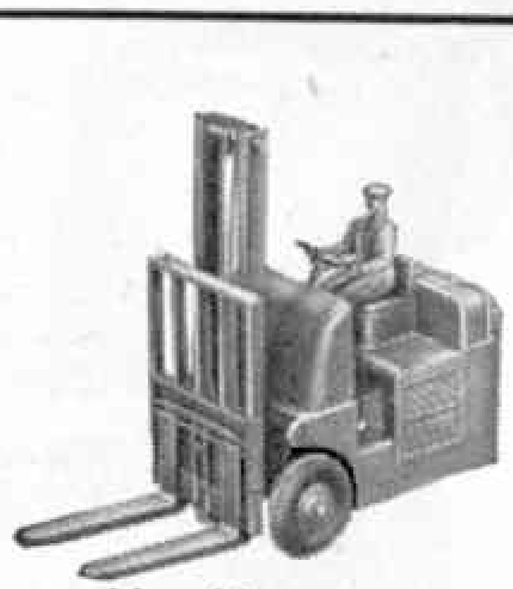
No. 30v
Electric Dairy Van
Length 3⅜ in. **3/3**

No. 40j
Austin Somerset Saloon
Length 3½ in. **2/2**

No. 40a
Riley Saloon
Length 3½ in. **2/2**

No. 40g
Morris Oxford Saloon
Length 3⅜ in. **2/2**

No. 582
Pullmore Car Transporter
Length with ramp raised 9⅝ in. **14/6**



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Fork Lift Truck
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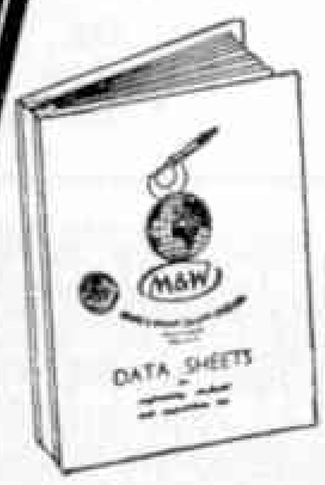

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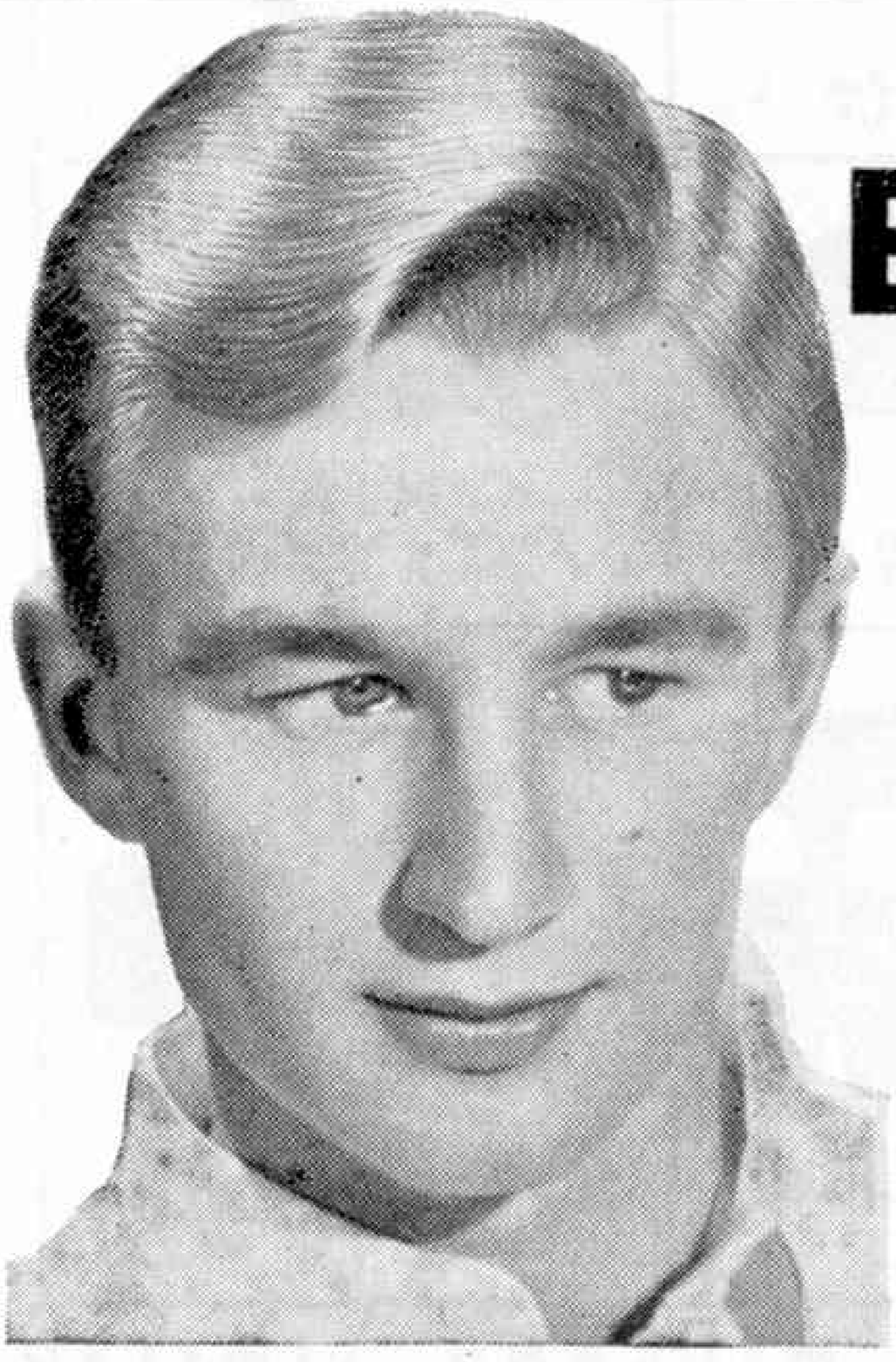

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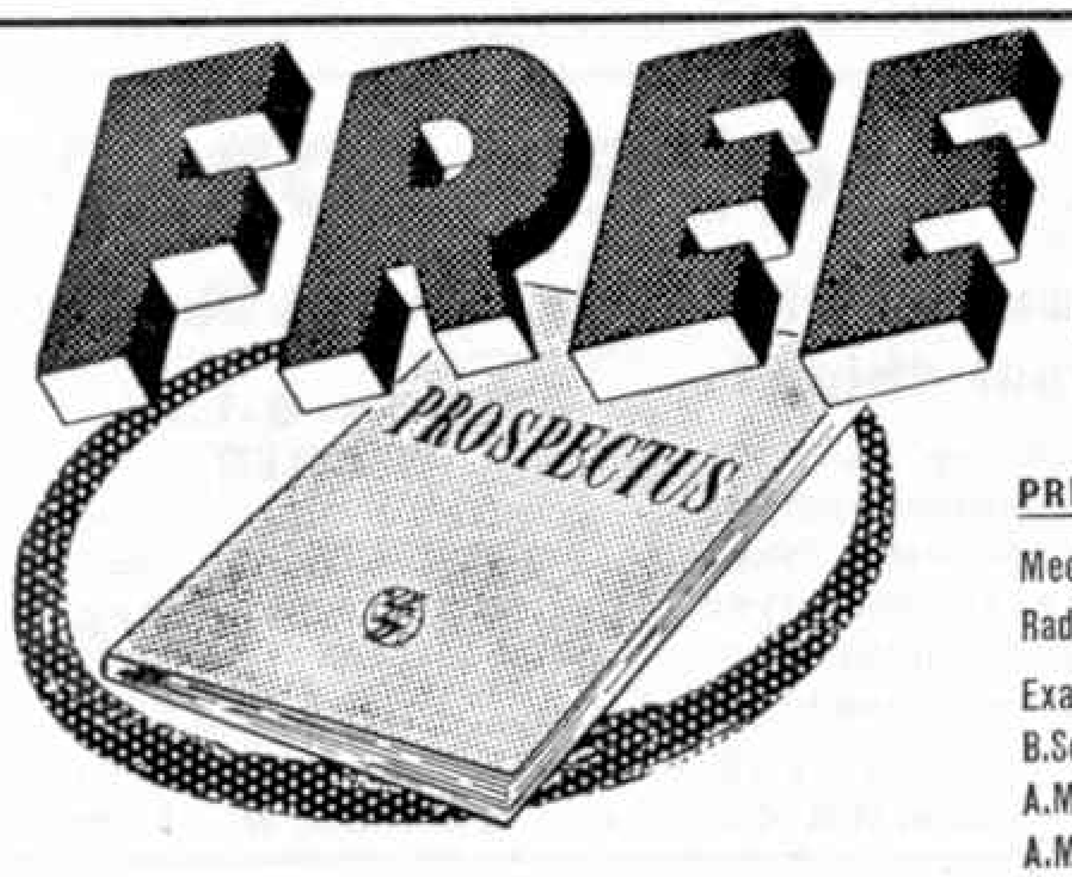

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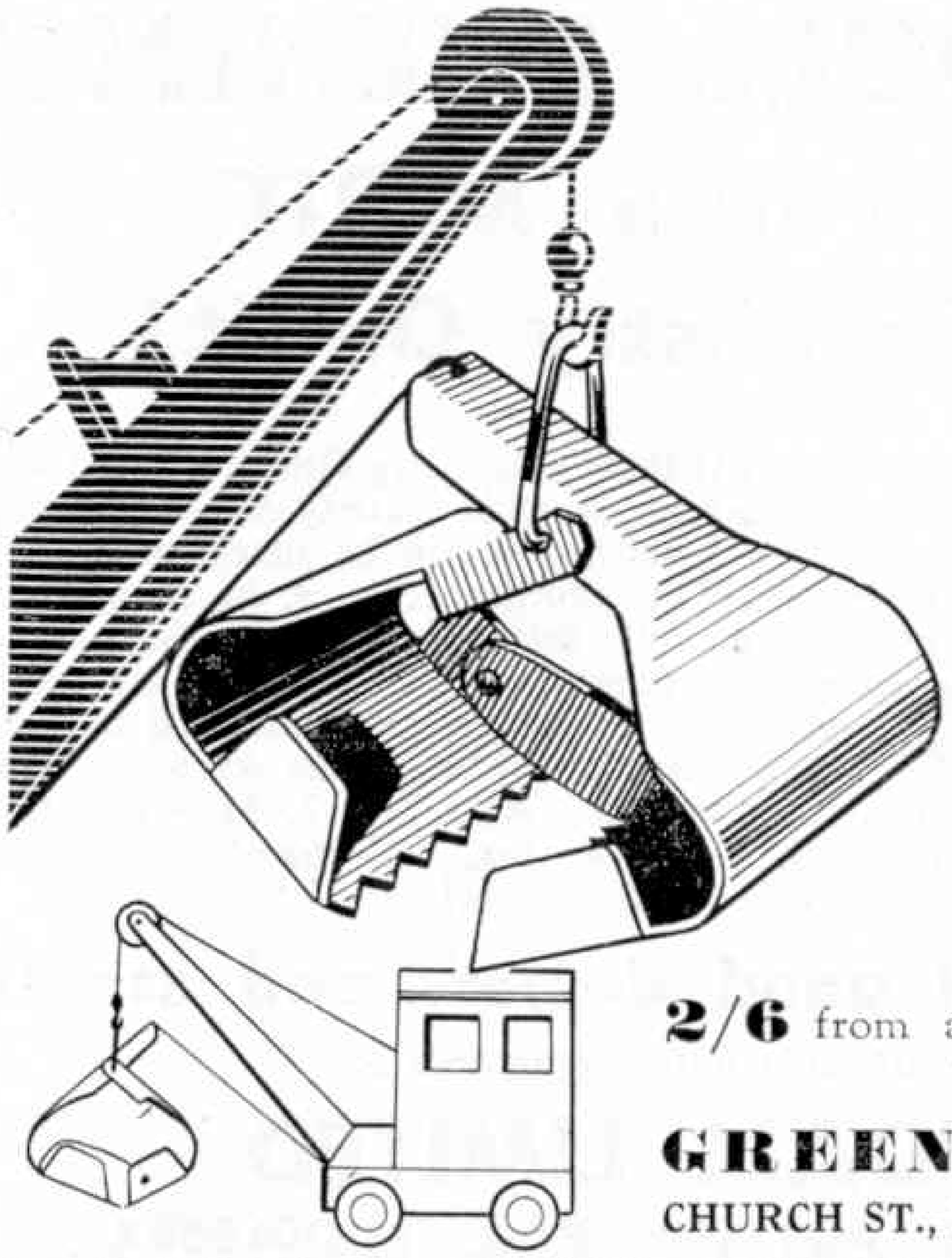

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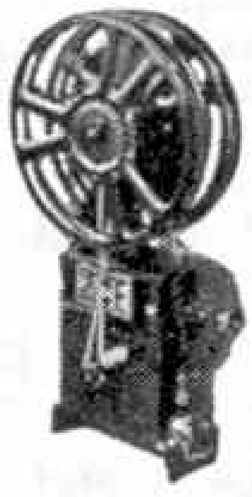

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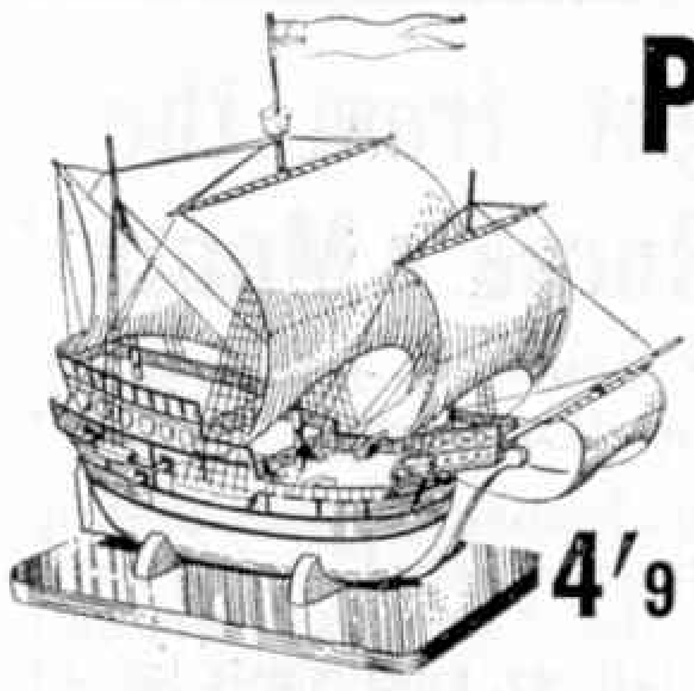

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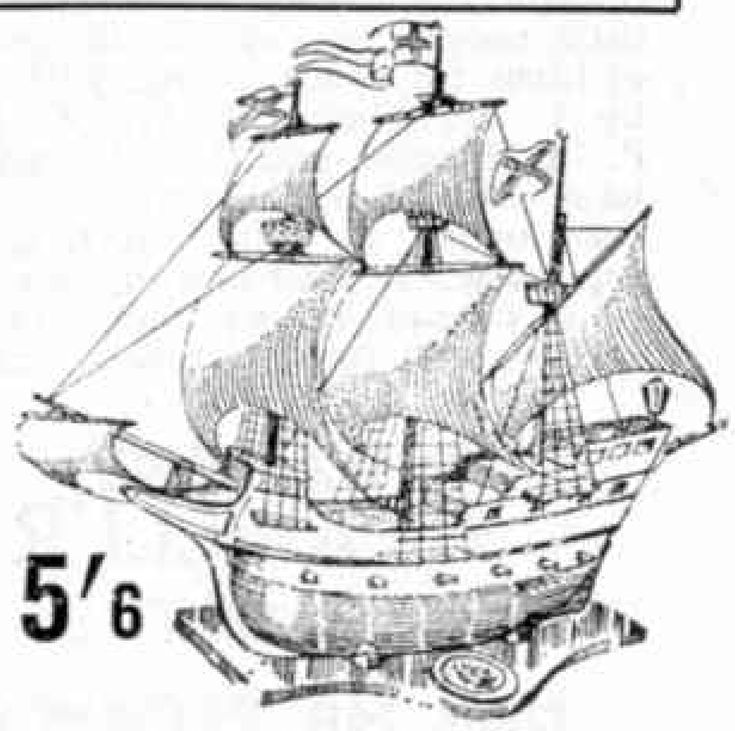

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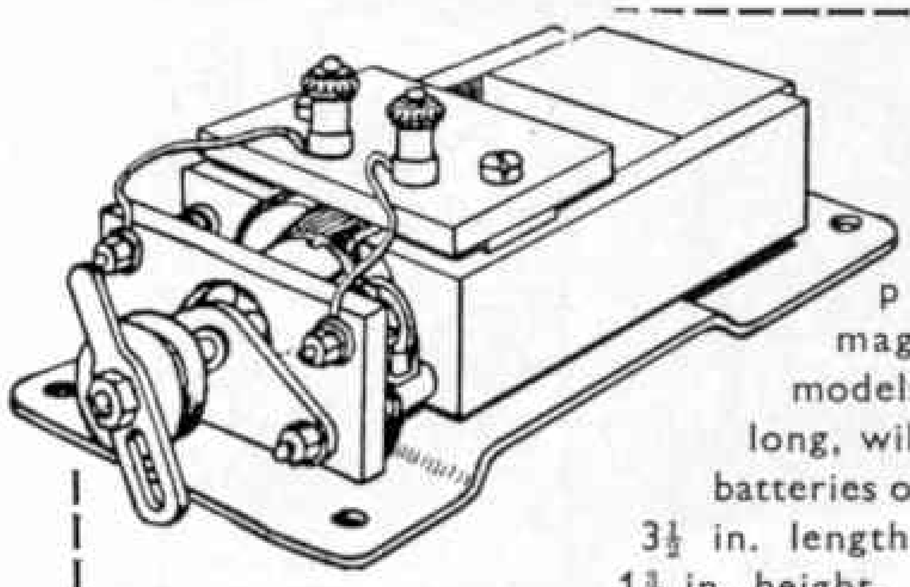

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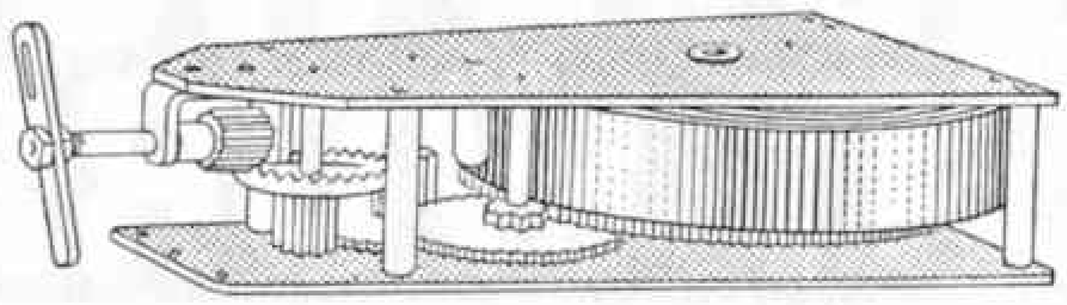

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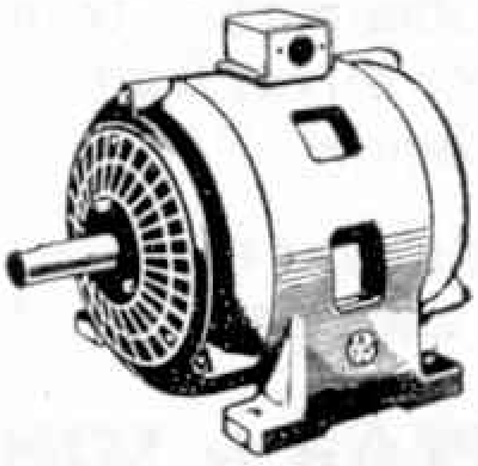

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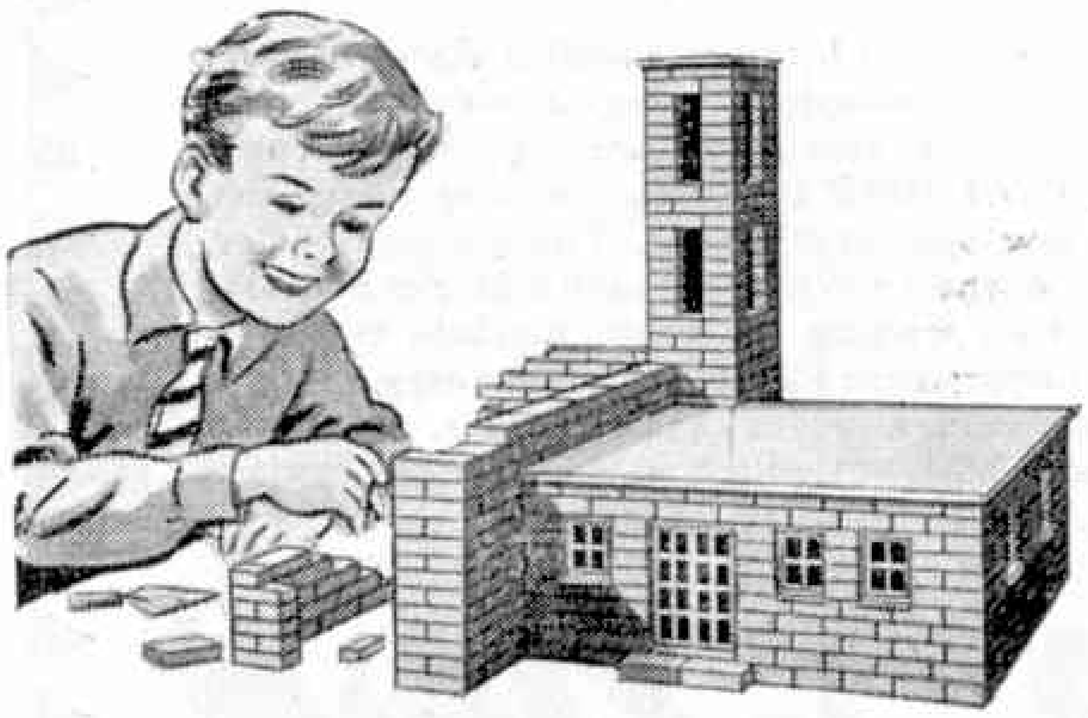

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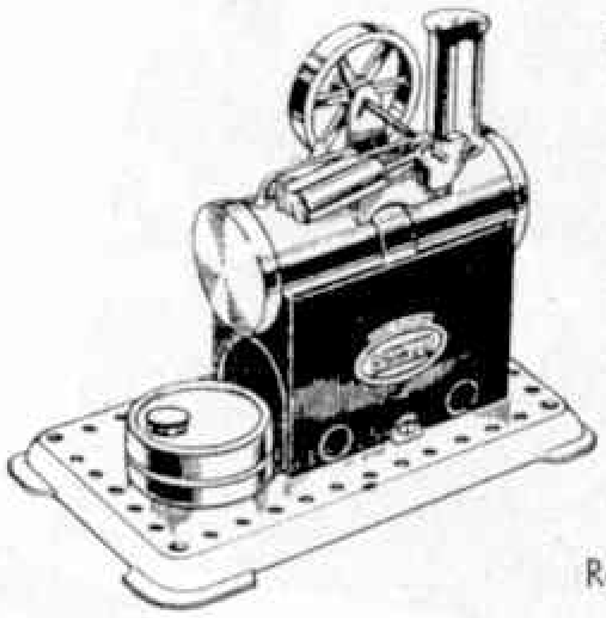

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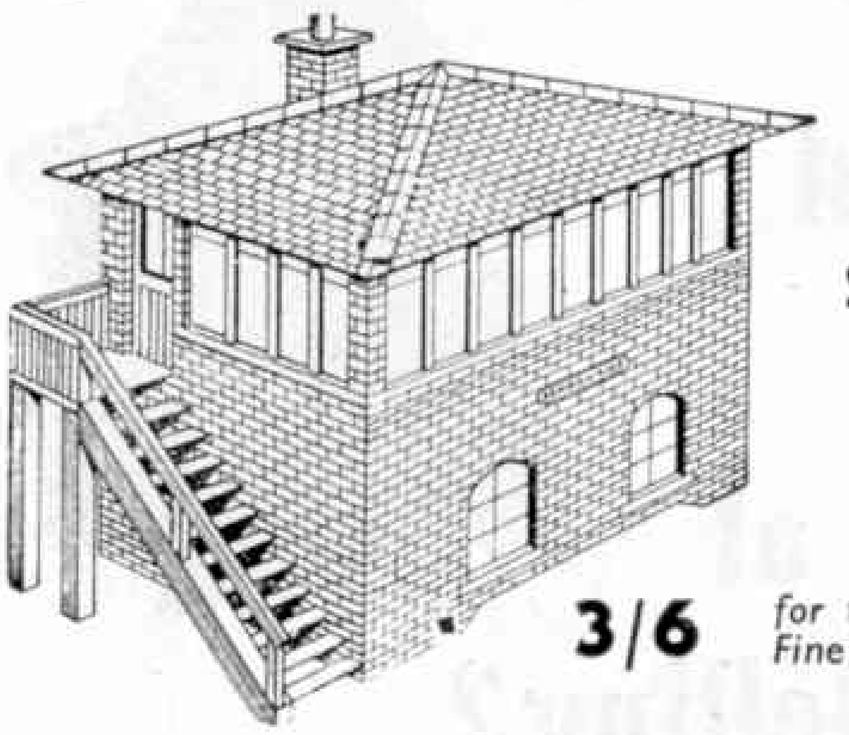

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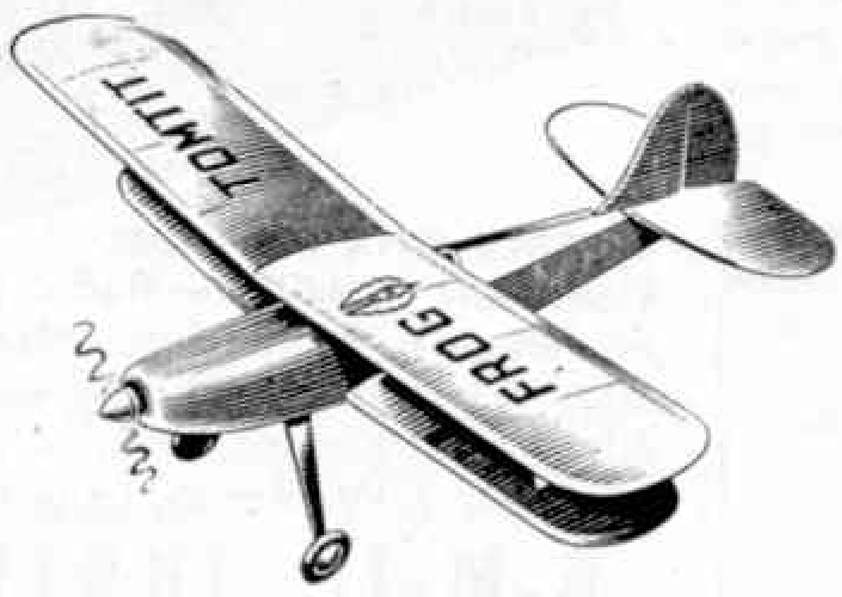

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4/11

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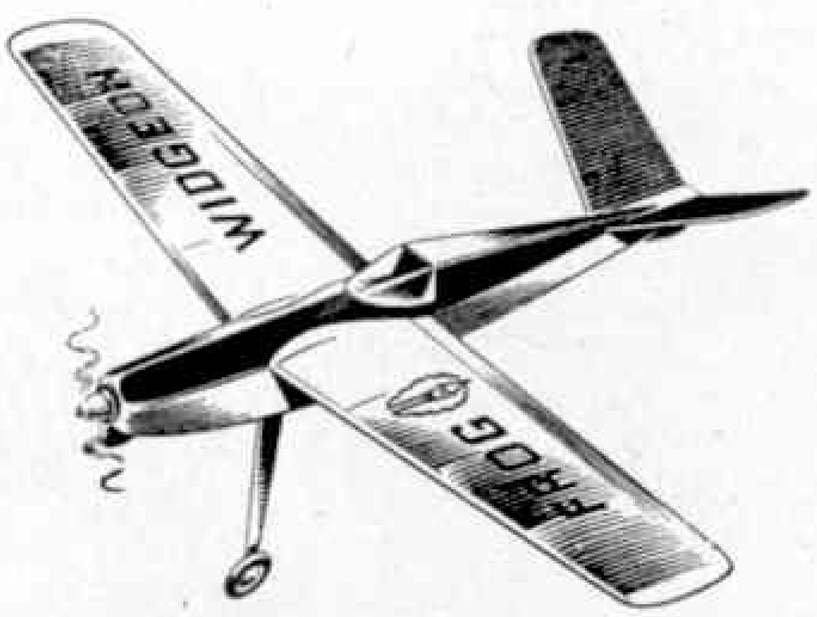

"Widgeon". A "V" tailed pylon racer with a performance to match its looks. Span 18 in.

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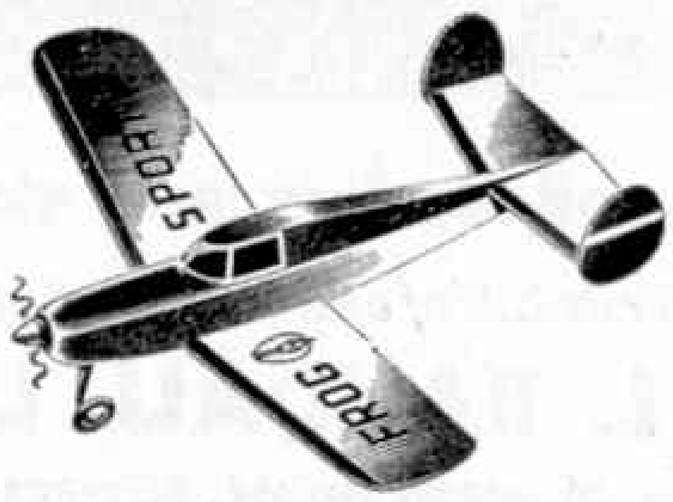

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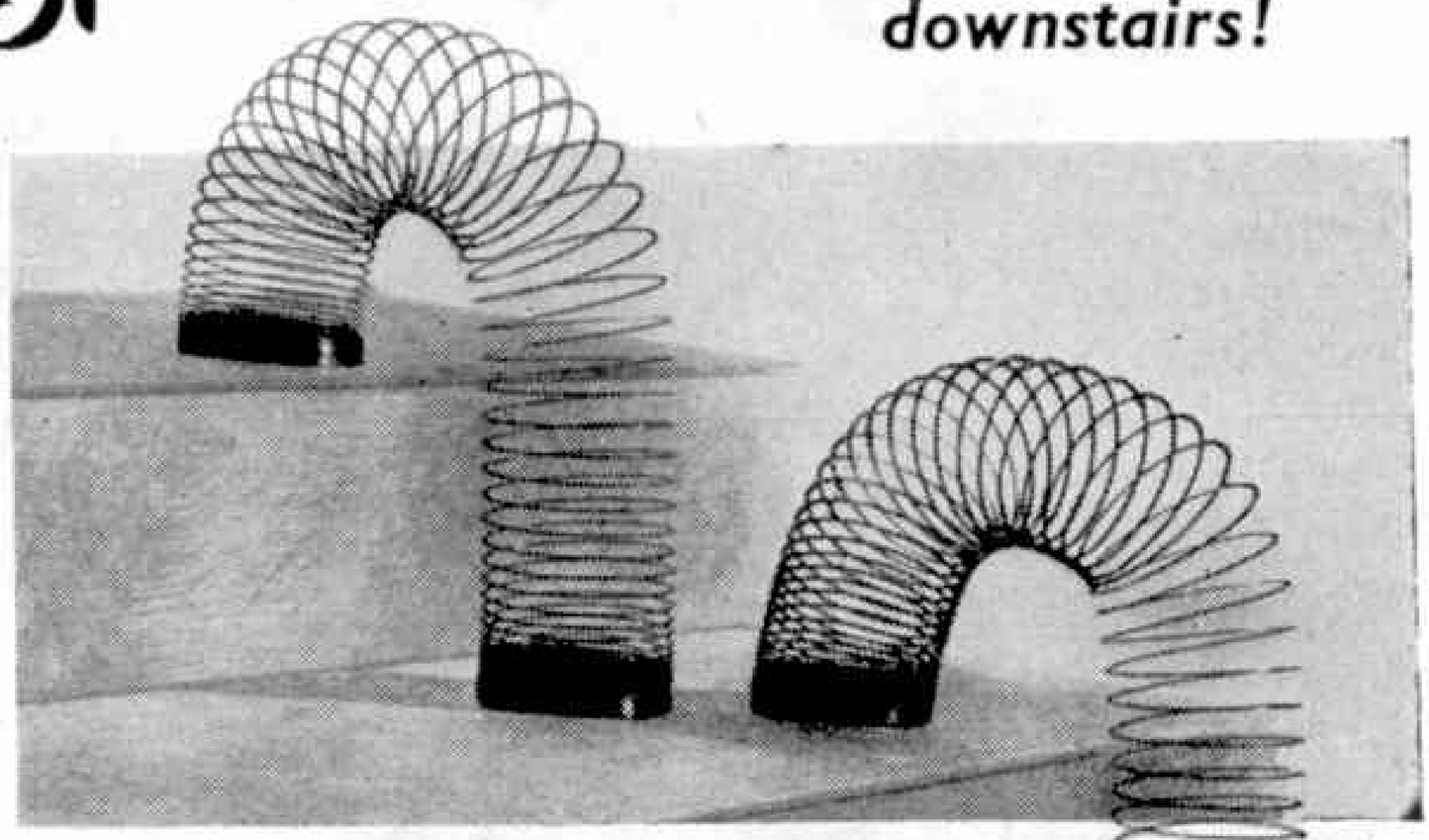

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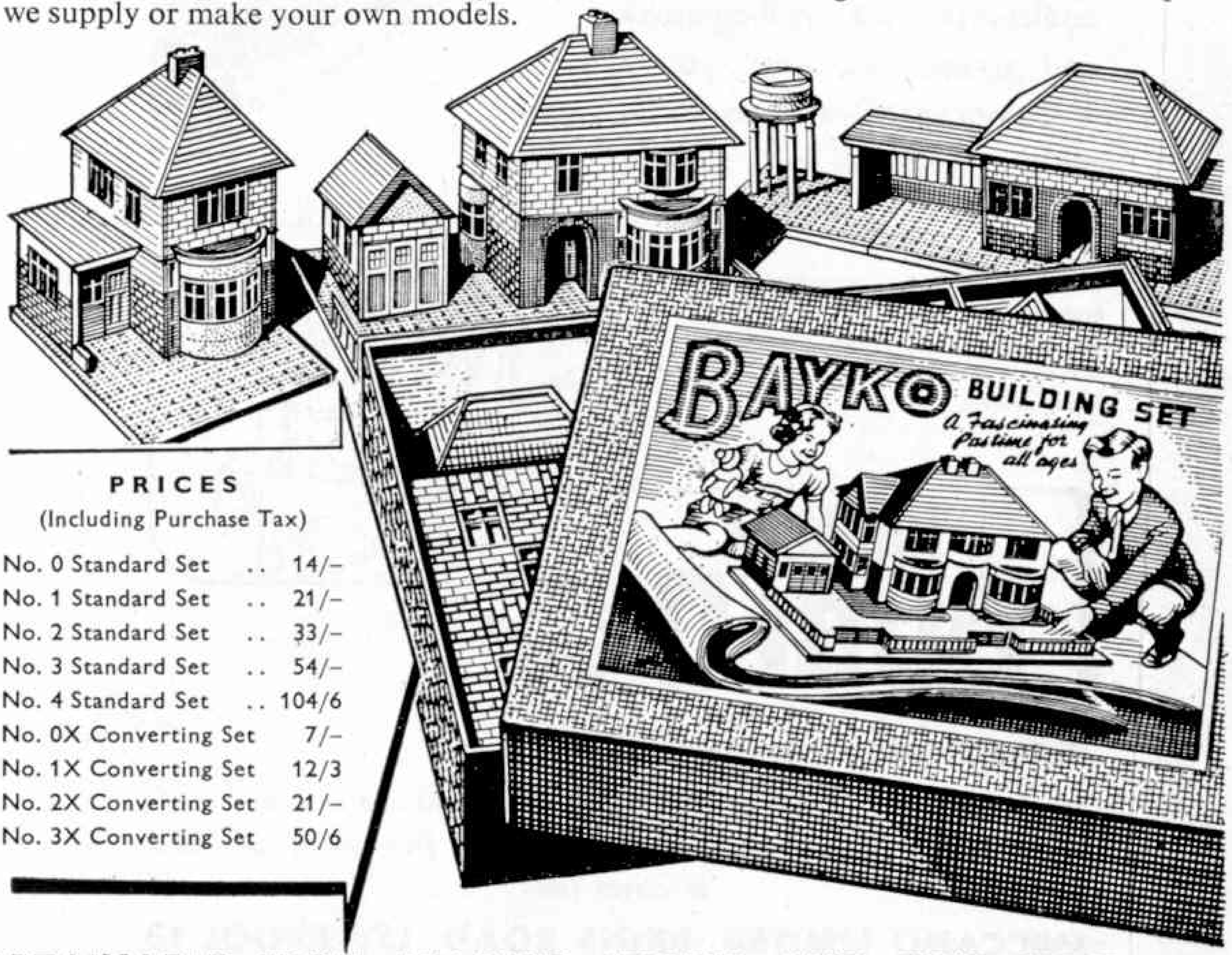

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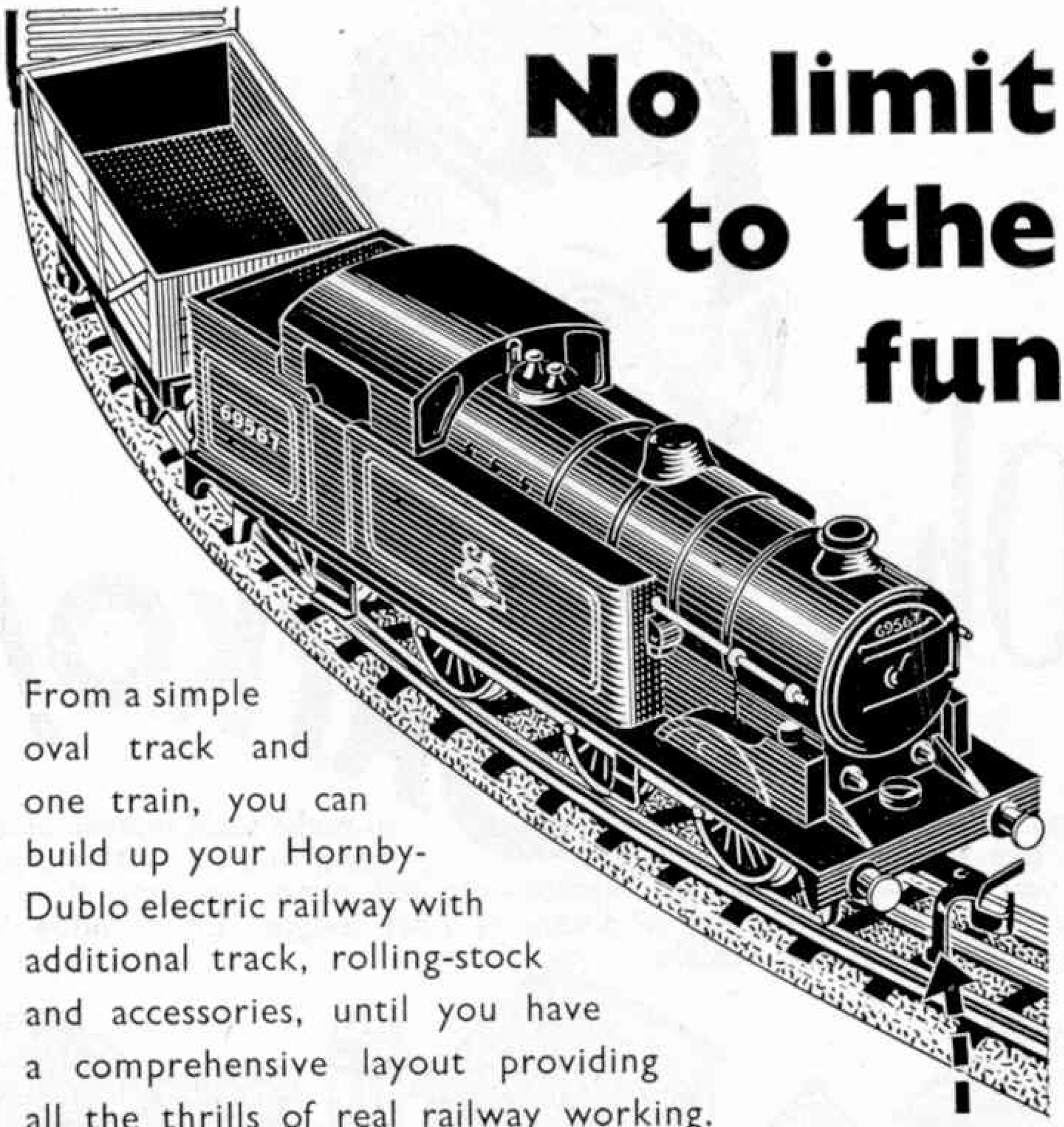

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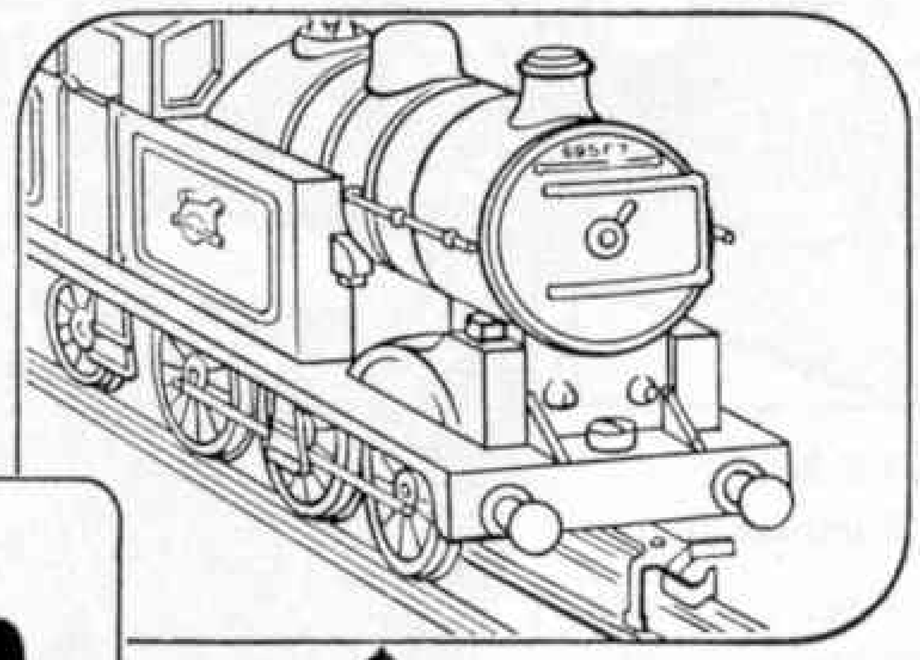

This 0-6-2 Tank Locomotive is typical of the class used on British Railways for local train haulage. It is one of the most popular Hornby-Dublo models.

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MECCANO MAGAZINE

Editorial Office:
Binns Road
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England

Vol. XXXIX
No. 2
February 1954

With the Editor

Last month I remarked that I was sure you would join me in wishing a happy New Year to the Magazine. I was right! Those words of course were written well before the 1st January, and since then I have been deluged with New Year cards and with letters from readers in all parts of the world expressing their wishes for the continued prosperity of the *M.M.* I want now to thank you all for your cards and letters, which delighted me because they were evidence of the interest you have in the Magazine and all that it means.

While you are enjoying the *M.M.* there are two points that I should like you to keep in mind. One is that you should not hesitate to write to me at any time when I can help you in any way, or even if you just wish to exchange friendly greetings with me. The other is that there must still be many boys who do not know what they are missing when they do not take the *M.M.* You all know this, and you should therefore take every opportunity of introducing it to others who are not yet regular readers, so that they too can share its advantages.

The post that marks the division between New South Wales and Victoria, Australia. Now look at the picture on page 104.

Now about next month's issue. I told you that it would be a special one, and I am sure that you will like it, if only because it will contain articles dealing with features of Merseyside, the home of Meccano. The cover will be a handsome one showing an A.E.C. Regent III bus, in the colours of the Liverpool Passenger Transport Department, at the Pier Head, where one can stand and look out over the Mersey, to see the ferry boats plying busily to and fro, and ocean-going ships at anchor or alongside the Landing Stage, making their way with the aid of tugs into or out of the docks, or perhaps going down the estuary on their way to countries overseas.

Keep a lookout for this splendid issue and make sure that you do not miss your own copy.

The Editor

Hungry Horse Dam

Hydro-Electric Power in the United States

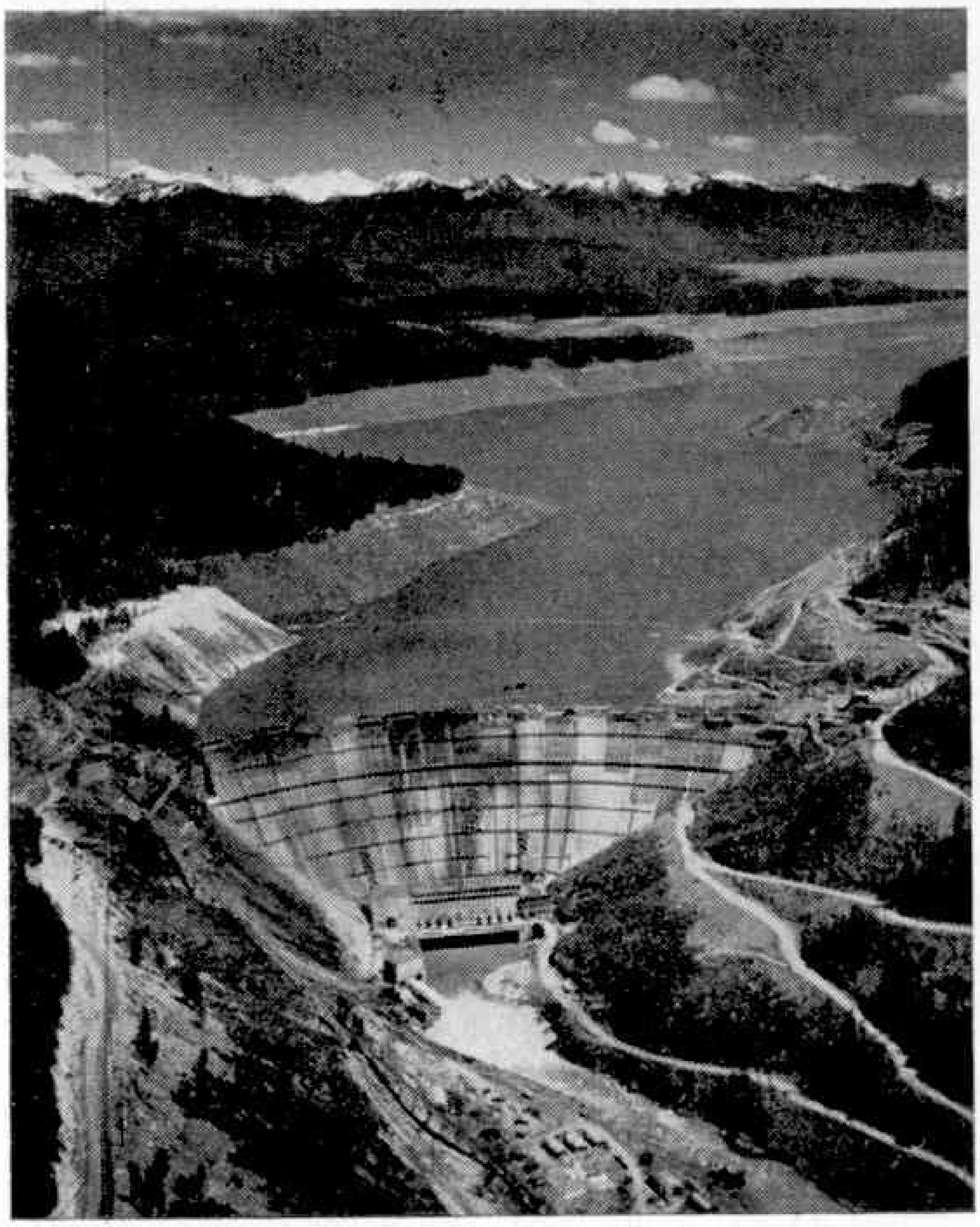
WHATEVER meaning the name Hungry Horse may have had in the past, it will in future be associated with a very large reservoir, a high concrete dam and a hydro-electric power plant in Montana, in the United States. The name may have had its origin in some episode in the story of the North American Indians who lived in this part of the United States, which is in the mountain region west of the prairies, or perhaps it marked some event in the advance of white people across the continent.

The reservoir that now makes the name Hungry Horse much more widely known than in the past has been formed in the course of the South Fork of the Flathead River. This name clearly is derived from that of a race of Indians who lived in the area, members of one of the several different tribes known as Flatheads. The waters of the river flow into Flathead Lake, and thence through other streams into the great Columbia River, 1,400 miles long, which has its head streams in Canada and drains a basin with a total area of 259,000 square miles.

Irrigation had been practised in certain areas of the Flathead Valley as early as 1885, but the idea of forming a dam in the course of the South Fork of the Flathead River arose in June 1943, when there was a great demand for power for war purposes. At first it was seriously suggested that the level of Flathead Lake should be raised, a scheme that would have had many advantages, but which would have meant flooding a large portion of the fertile Flathead Valley and indeed putting the neighbouring town of Kalispell under water. This scheme therefore was not pursued. Local interest had for some time wished to form a reservoir on the South Fork of the Flathead River, partly to allow the generation of hydro-electric power, but also to enable flood waters to be controlled, and eventually the construction of a dam on this site was authorised.

One advantage of this choice was that the country that would be flooded when the reservoir was formed behind the dam to be built was just wild and undeveloped territory.

Construction of Hungry Horse Dam was begun in June 1948 under the direction of the United States Bureau of Reclamation. The Bureau is famous for the many schemes of this kind that it has planned and carried out in the United States, and some of the greatest of these projects have been associated with the water resources of the basin of the Columbia River. Two of the most important of these are the Grand Coulee and Bonneville Dams, both in the course of the Columbia River itself, and the Hungry Horse reservoir actually makes possible an increase in



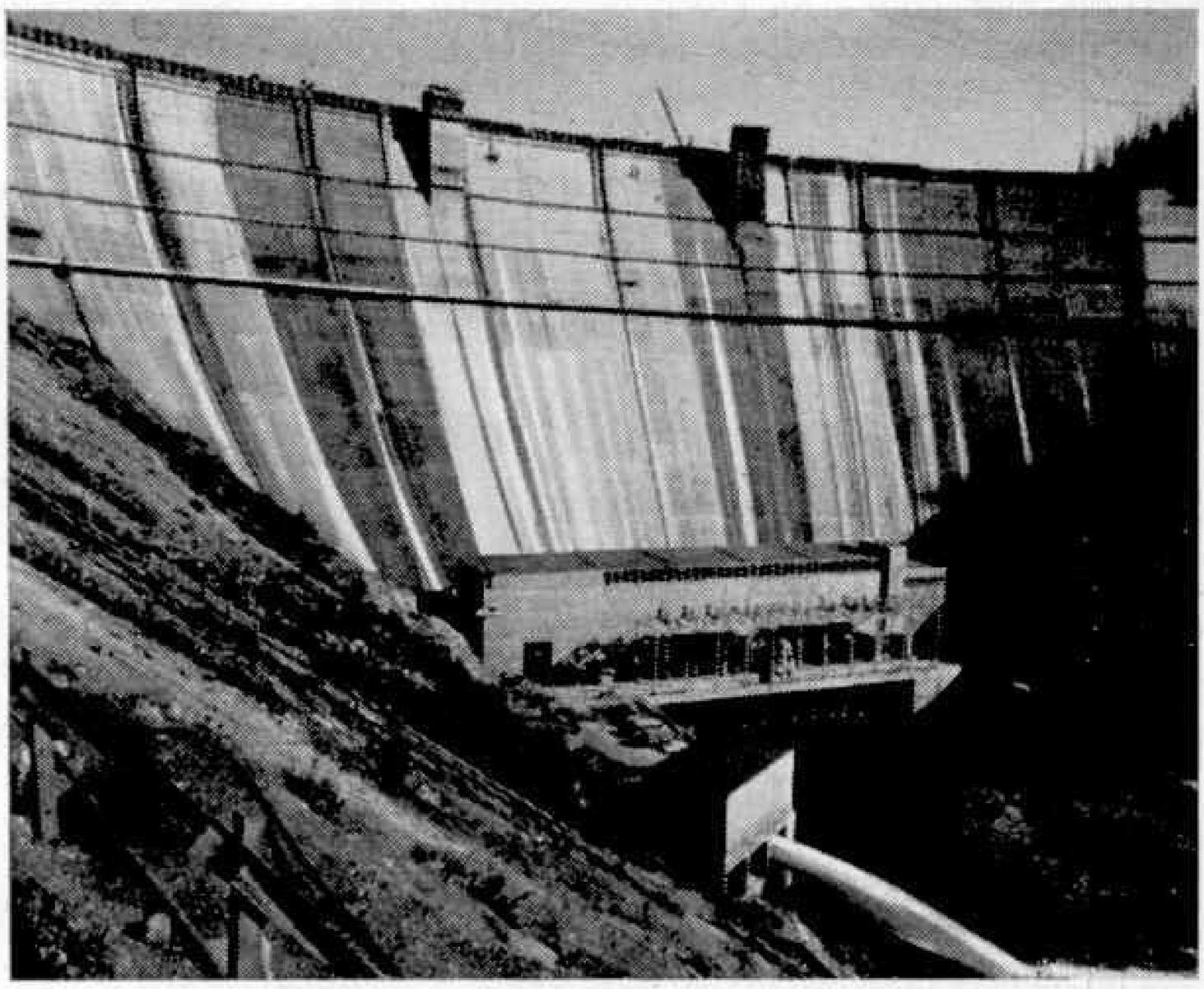
What Hungry Horse Dam and the great lake formed behind it look like from an aeroplane. The lake is 34 miles long. The illustrations to this article are reproduced by courtesy of the Bureau of Reclamation, Washington.

the power capacities of these and other hydro-electric power plants in the area by improving the regulation of the river.

The site of Hungry Horse Dam is about five miles upstream from the mouth of the South Fork of the Flathead River. It is a concrete arch structure, which has a length at its crest of 2,115 ft. The height of the dam is 564 ft., and there is a roadway 30 ft. wide along the crest.

The height of Hungry Horse Dam is of interest. It appears to be exceeded in the United States by only two similar structures, Hoover Dam on the Colorado, formerly known as Boulder Dam, which is 726 ft. in height, and Shasta Dam in northern California, the height of which is 672 ft. But there are dams in France, Switzerland and Italy, with one in India, either built or under construction, that are higher than the Hungry Horse Dam. Nevertheless the latter, a gigantic mass of more than three million cubic yards of concrete, is a noteworthy structure. It is what is called a gravity dam, that is it resists the pressure of water behind it by virtue of its weight, its arch sweeping across from one sloping side of the canyon through which the river originally flowed to the other. A solid dam of this kind is keyed into the rock or other foundation as a guard against failure by sliding.

The Hungry Horse project, the most important American civil engineering scheme to be completed in 1952, was dedicated by President Truman on 1st October of that year. During the ceremony marking this occasion Mr. Truman put into operation the first generator of the power station built below the Dam. The complete scheme will involve the installation of four of these units, each with a capacity of 71,250 KVA so that the total capacity of the power station is to be 285,000 KVA. The last of the four sets was expected to be brought into operation at the end of 1953.



At the foot of Hungry Horse Dam is a hydro-electric power plant with a capacity of 285,000 KVA.

One of our two illustrations shows a general view of the Dam from the air. Behind the Dam, curving gracefully upstream, part of the great reservoir can be seen. This impounds about 3,500,000 acre-feet of water. It is long and narrow, stretching indeed more than 30 miles backward up the valley, now filled with water. Our second illustration shows the Dam itself and the power house in greater detail as they appeared when construction was almost complete. The tail race area and river outlet valve house are shown well in this picture, in which the great height of the structure is apparent.

Steel—The Mysterious Metal—(*Continued from page 81*)

of the rock exerts a counter force, action and reaction always being equal, and if the steel were unable to withstand the combined action of these two forces, it would be squeezed until it collapsed.

In designing a skyscraper, an engineer therefore has to know what compression the steel will stand. There are tests designed to tell him just how much tension, as opposed to compression, that is pulling as distinct from pushing, the steel will resist. The method is to pull or tug mechanically with increasing force at the test piece until the steel "gives" and won't recover, and measure the force required to produce this result. These are tests of tensile strength, as it is called. There are similar tests of compression.

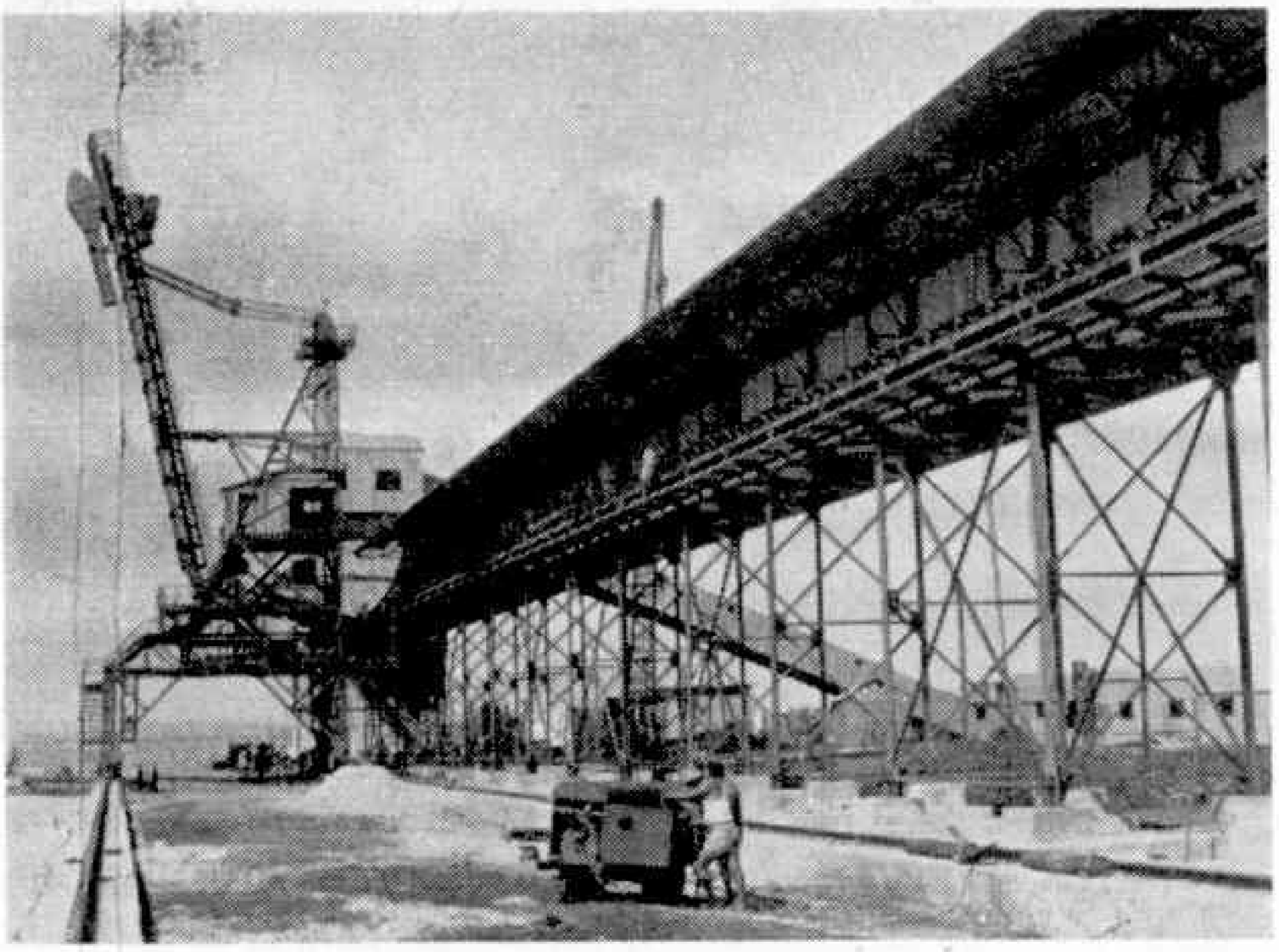
Now you'd suppose that the compression resistance of the steel would be equal to the tension resistance; in other words, that the steel would stand just as much pushing as pulling. But it doesn't. It stands more, sometimes twice as much. Nobody knows why this is so, but it's believed that it has something to do with the common attractions and repulsions of the iron and other atoms of which the steel is composed. In other words, it's another mystery!

Of course, there are many other mysteries about steel that I haven't touched on, mysteries that are being slowly and patiently studied in research laboratories all over the world; but many of these are far too complicated and abstruse to be dealt with in a brief article.

Iron Ore from Conakry

A West African Mining Enterprise

A JOINT Anglo-French venture is now bringing a great new deposit of iron ore on the coast of French Guinea into world trade, reinforcing ore supplies from Sierra Leone and Liberia. This deposit



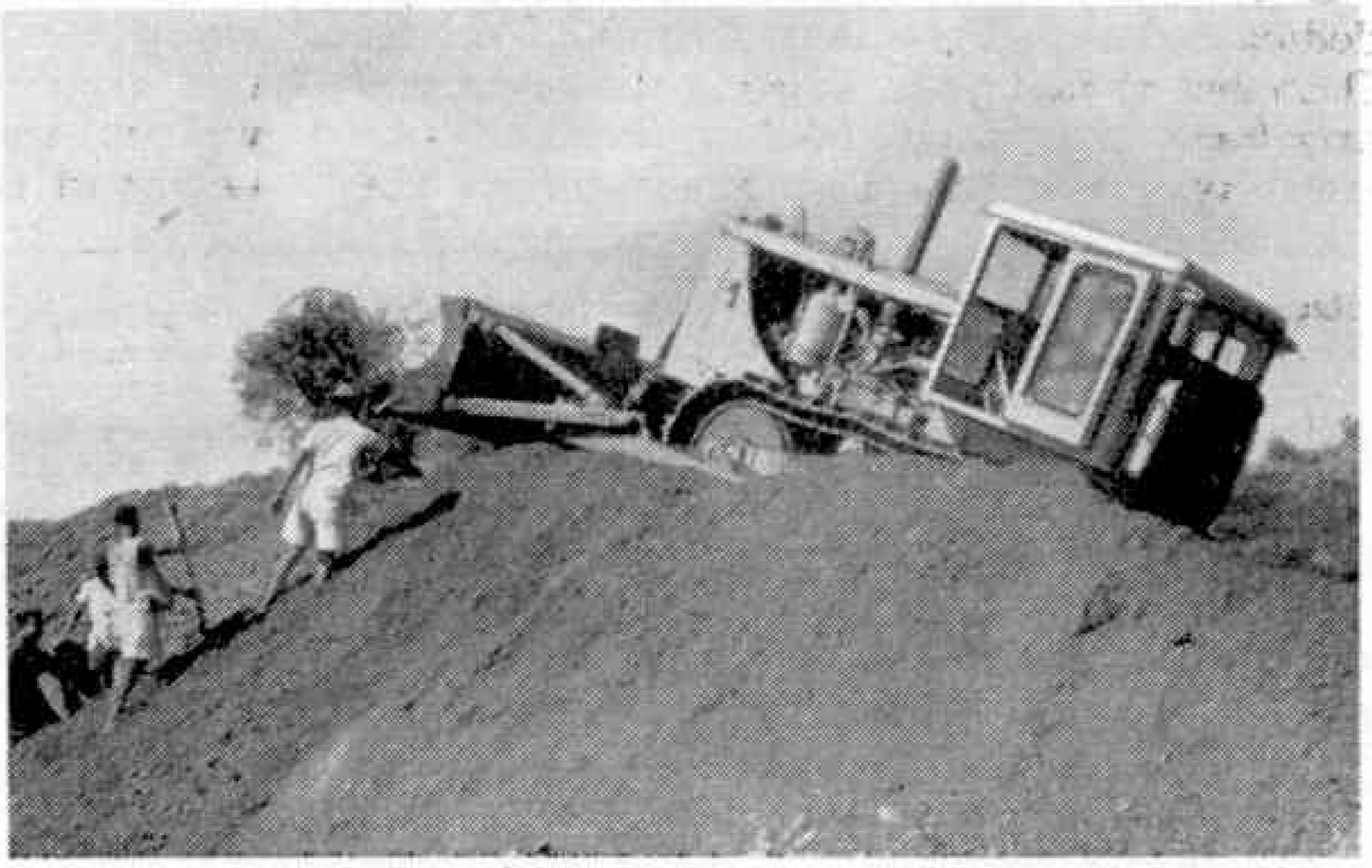
After crushing, the ore is sent by rail to the port, five miles away.

is in Conakry, a long, low, red tongue of land that juts out of the marshy mangrove-fringed coast of French Guinea into deep water. It is red because much of it is iron ore; a deposit of probably 250,000,000 tons of roughly fifty per cent. ore consisting of a hard crust and a softer lower bed, and sloping gradually upwards towards the mainland, without any overburden. The top soil, if there ever was any, was long since washed away, and the ore was formed by laterization of the rocks and concentration of the mineral elements.

Its nature is unmistakable; but the value of Conakry was first conceived as geographical rather than mineral. It forms an ideal port. When, in the 1870s, the confused boundaries of the French and British West African colonies were being readjusted, it was agreed that those parts of the coastline which were in British hands should be ceded to France, while islands in British hands off the French shore should remain British. Conakry was British—and water flowed between it and the mainland. A zealous French official hurriedly built a causeway to the mainland and so ensured that the natural pier should pass under the tricolour.

Conakry became French; none the less, in the fullness of time, its mineral wealth is being developed in concert by ourselves and our allies to increase supplies of ore for the steel industries of Britain and other Western European countries.

It is an almost perfectly sited deposit; development has awaited only certain refinements of technique. After the war a special company, B.I.S.C. (Ore) Ltd., was established by the companies in the British steel industry to import iron ore for the industry on a co-operative basis. In order to meet the steady increase in British requirements, which was an integral part of the industry's First Post-War

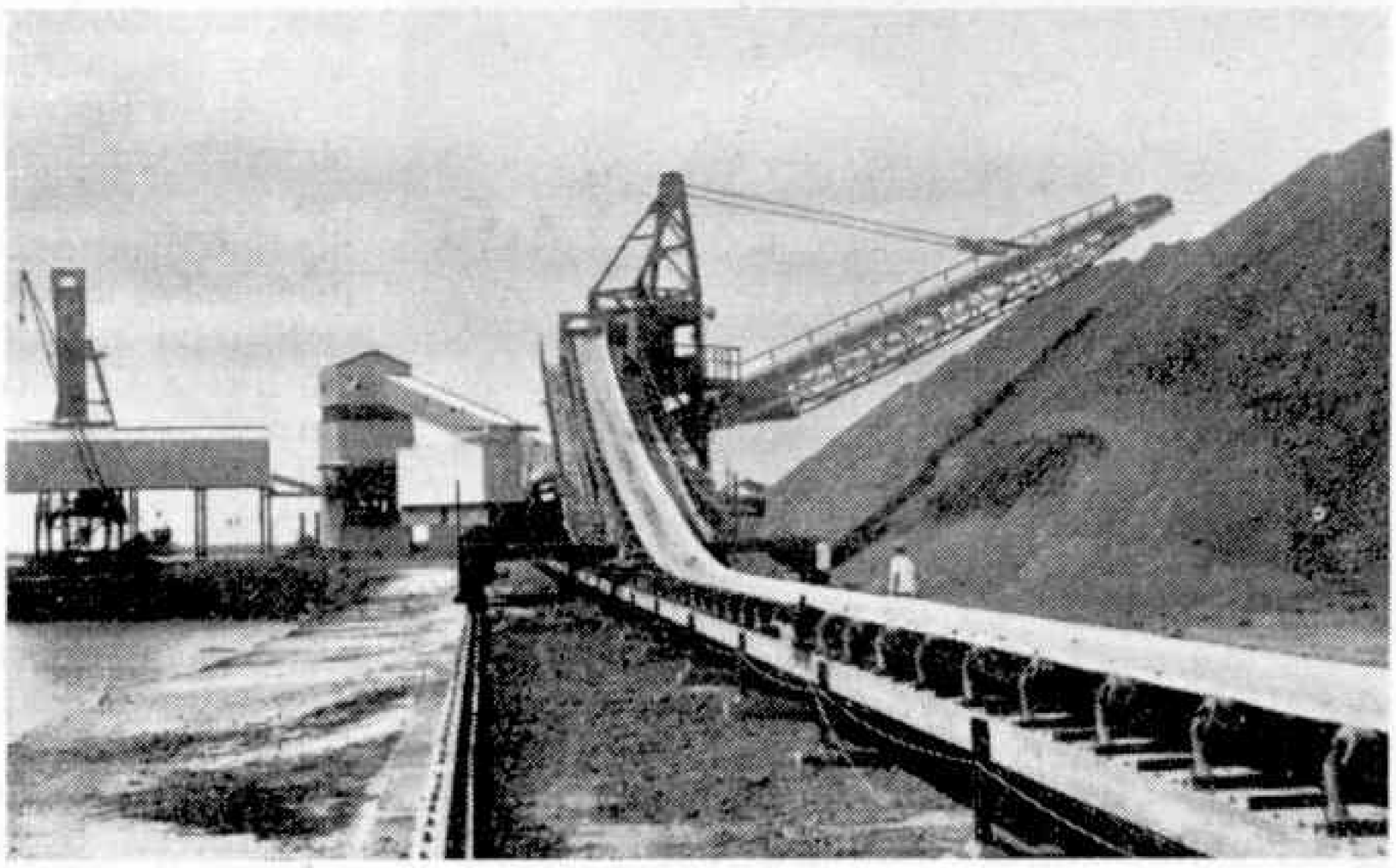


Mining is just a matter of scraping the iron ore up with a bulldozer, as it has no covering of soil.

Development Plan, B.I.S.C. (Ore) sent mining engineers to survey overseas reserves and recommend where new sources of supply should be opened up. In co-operation with the French they examined the iron ore deposits near Conakry and proved the existence of very worth-while resources.

This survey took place in 1948. It was decided to go ahead and a special company, the Compagnie Miniere de Conakry was formed. The capital was provided jointly by the French Government and by French and British private capital, the British finance being provided by the steel industry, which is actively collaborating in the venture.

The physical development of the site was started in 1950. The preparations for mining involved clearing hundreds of acres of bush, the construction of a new deep water wharf and of new roads and railways, and the virtual creation of a new town. It has, nevertheless, proved possible to complete this, and all the other work involved in the opening up of a large new mine in tropical conditions, within three years.



Treasure at Conakry—iron ore, probably 250 million tons of it.

Output is planned to reach 1¼–1½ million tons a year, which will make an estimated 6–800,000 tons of pig iron. This output is similar to that of the mines in Sierra Leone, 100 miles to the south. The potential output of Conakry is at least double this.

"Mining" is simplicity itself. Charges are fired in the crust to break up the surface, and a giant digger loads the material into motor lorries of 2–5 tons capacity, which carry it to the crusher. The crusher reduces the ore to lumps no larger than 6 in. diameter. The material is screened, loaded into 65-ton bottom-door railway cars, and hauled by diesel locomotives a mere five miles to the port, where a loading wharf has been built. It is stockpiled at the port installation and loaded from the bottom of the pile by a belt conveyor into ore-carrying ships. A 12,000 tonner can be loaded in less than 24 hours.

Parallel with the development of new ore fields to meet its additional ore requirements, the British industry is taking active steps to provide the shipping which will be required to carry the additional tonnage. Fifteen specially designed ore carriers have already been ordered. The first of these, the *Ormsary*, is already in commission and bringing ore from Conakry and other sources to Britain.

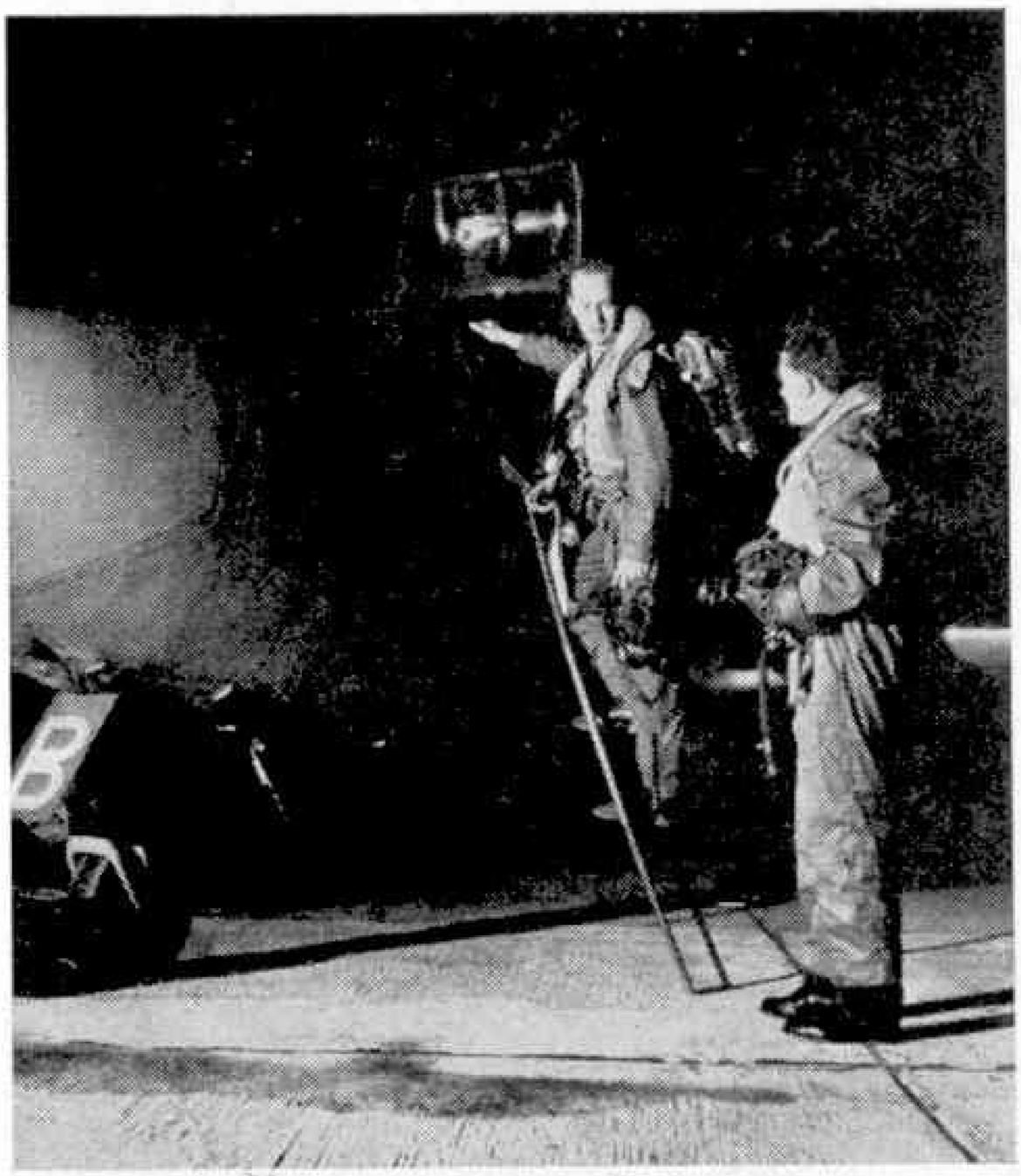
The first shipment of ore from Conakry to Britain was made in February last year and the mine was officially inaugurated in April. Production is at the rate of 25,000 tons a week, and will rise steadily.

Thus iron ore is added to the flow of bananas, pineapples and bauxite from Conakry, and will make a substantial additional contribution to the wealth of the French Guinea province of French West Africa.

The bauxite is won from deposits on three other islands off Conakry, but further out. These were British at the time when slavery in the British Empire was abolished, but on one of them a Scots slaver held out as King to the last; forbidden to trade, he declined to submit to jurisdiction, and opened fire upon the invaders of his kingdom from his slave barracoon. War-ships had to be brought up to batter him into submission, and he died the death of a pirate—probably the last Scotsman to end so romantically, if unwisely.

Conakry, past and future, stands as a symbol of British and French enterprise on the coasts of West Africa.

This article and our illustrations are reproduced by courtesy of *Steel News*.



Night Sortie from West Malling

By John W. R. Taylor

THE Royal Air Force Station at West Malling in Kent was not opened until June 1940; but in just over 13 years it has built up a tradition of achievement and courage second to none.

On the walls of the Officers' Mess hang the badges of its squadrons; with an imposing record of decorations earned by their pilots and portraits of some of the great squadron commanders who flew from West Malling—men like Wing Cdr. Guy Gibson, V.C., D.S.O., D.F.C., heroic leader of the wartime "dam-busters", who wrote that: "Of all the airfields in Great Britain, here, many say (including myself), we have the most pleasant. It is near London and also near the sea. The local people are kind and generous, probably because they saw the Battle of Britain rage above their heads, and know more than most what the Air Force has done for this country."*

Guy Gibson goes on to explain that the Germans did their best to destroy West Malling in 1940, but it was put up again quickly among the trees, which made it difficult to see from the air—a hornets' nest cradled among green trees and green fields—a lovely sight.

Unfortunately I was able to see little of the beauty of the Kentish countryside when I drove down from London recently to find out for you something about West Malling's present role in Britain's defences. The glare of my car headlights picked up only the hedges of country lanes, until the unique "pub sign" of the Startled Saint, showing Spitfires buzzing round the poor gentleman's halo, told me I was nearly at my destination.

I could hear the roar of Vampire and Meteor night fighters taking off on practice interceptions as I drew up at the Station Guard House and presented my impressive-looking Air Ministry Pass.

Fifteen minutes later I was trussed up like a Christmas turkey in the dark, cramped cockpit of Vampire N.F.10 night fighter "E for Easy"; resplendent in borrowed flying suit, complete with "wings" and embroidered squadron crest, yellow Mae West "lifebelt", helmet and oxygen mask. I had clipped together the four straps of my parachute and four more straps of the seat harness, and plugged in my radio-telephone (R/T). Despite which I discovered that, by releasing a small catch on the side of the cockpit, I could lean forward quite comfortably and have a good look at the complex radar screens and maze of other equipment which surrounded me.

The illustration at the head of the page shows the crew climbing aboard a Vampire N.F.10 at the Royal Air Force station at West Malling.

Soon the commander of West Malling's Vampire squadron, Sq. Ldr. D. C. Furse, D.F.C., clambered into the pilot's seat to the left and slightly forward of my navigator's position. After strapping himself in and explaining to me the layout of the cockpit, which is very similar to that of the Mosquito fighters he flew during the war, he slammed the hood shut and started the aircraft's Goblin turbojet by simply pushing one button on the instrument panel.

There was a muffled explosion as the engine lit, and if I could have been in two places at once I should have seen a burst of flame from the tail of the jet-pipe. As it was, the instrument panel showed me what was happening. R.P.M. and temperature indicators began to spin round like the

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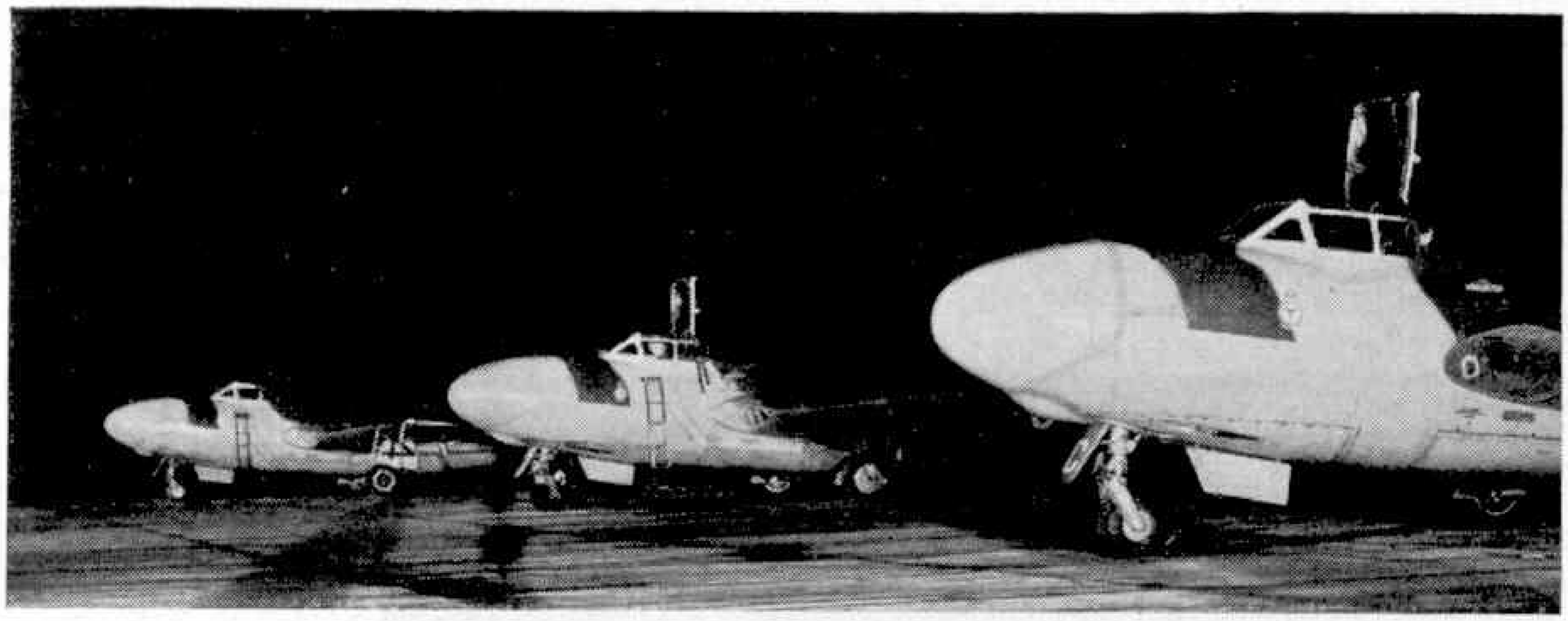
* *From his book "Enemy Coast Ahead," published by Michael Joseph Ltd., price 7/6.*



Vampire N.F.10 night fighters lined up at West Malling.

second hand of a supersonic clock, and the whistle of the turbine grew steadily more shrill until it settled down to a barely-audible whine.

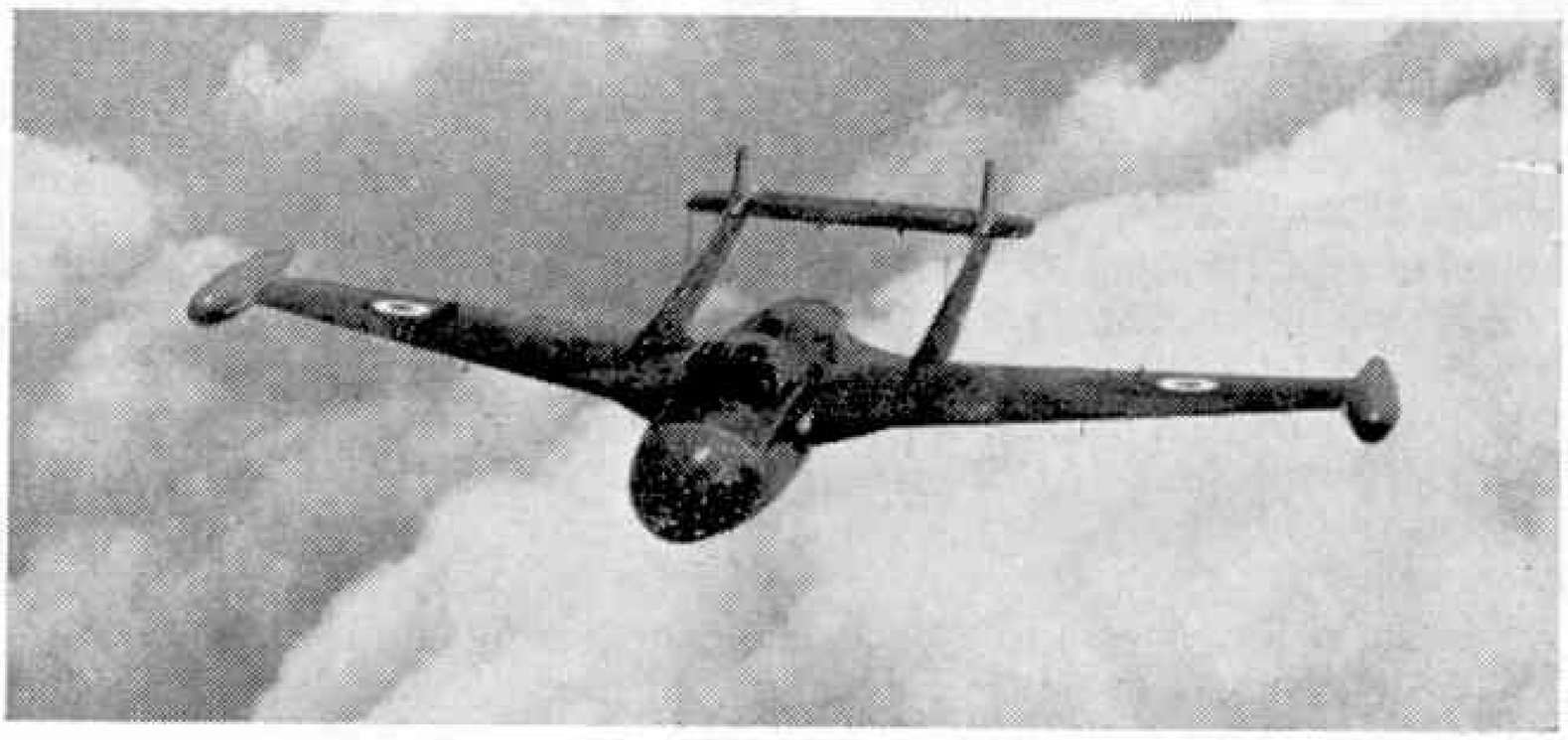
The R/T crackled permission to taxi to the runway and we began to trundle round the perimeter track, with strings of amber and blue lights flashing under our port and starboard wing-tips respectively. There was little else to see. The Station buildings were dark on the skyline. Nearer was the double ribbon of the runway flare-path, more darkness, then the green wing-tip navigation light of our Vampire, outlining the square-cut wing and the big silver fuel tank slung beneath it.

We waited while another Vampire landed—flown by one of the squadron's two Polish pilots. Then, a quick turn on to the runway, whose lights flashed past faster and faster as Sq. Ldr. Furse pushed forward the throttle. Slight pressure pushed me back against my seat; the air conditioning system whisked warm air past my face; and in an instant we were climbing and banking gently in a left-hand circuit, with the lights of Tonbridge twinkling like an immense diamond tiara to our right.

Had we been on a proper interception sortie, we should at this stage have been passed from Local Control to a Ground Controlled Interception radar station. "Climb to angels twenty-five (25,000 ft.). Vector one eight zero." We should have been guided towards our target by an unseen, unknown "somebody" inside a concrete building miles away on the ground—somebody who could see both us and our target as tiny blips of light on a radar screen, slowly drawing together.

After a time we should have been brought close enough to the enemy bomber for our own A.I. (Airborne Interception) radar scanner, mounted inside the Vampire's fibreglass nose, to pick it up. The greenish screen in front of me would have indicated the bomber's range and bearing, as I guided the pilot in for the "kill."

The finest radar in the world is, however, no substitute for a pair of good eyes, and at a distance of about 1½ miles from the bomber the pilot would have started peering around for a first glimpse of tell-tale exhaust glow. A few seconds later, the bomber would probably have become visible as a dark silhouette against the stars—a silhouette that *must* be properly identified, for there were tragic cases of friendly aircraft being shot down by mistake in the last war.



The faster and more powerful Venom N.F.3 fighter, the type scheduled to replace the Vampires and Meteors in due course.

Once seen and identified, the bomber would have had little hope of escape from the Vampire closing in stealthily and invisibly from behind. Its silhouette would have become larger and larger in the gyro gunsight. The fighter pilot's thumb would have closed on the gun button on his control column, and the night would suddenly have become brilliant with the flash of the Vampire's four 20 mm. cannons.

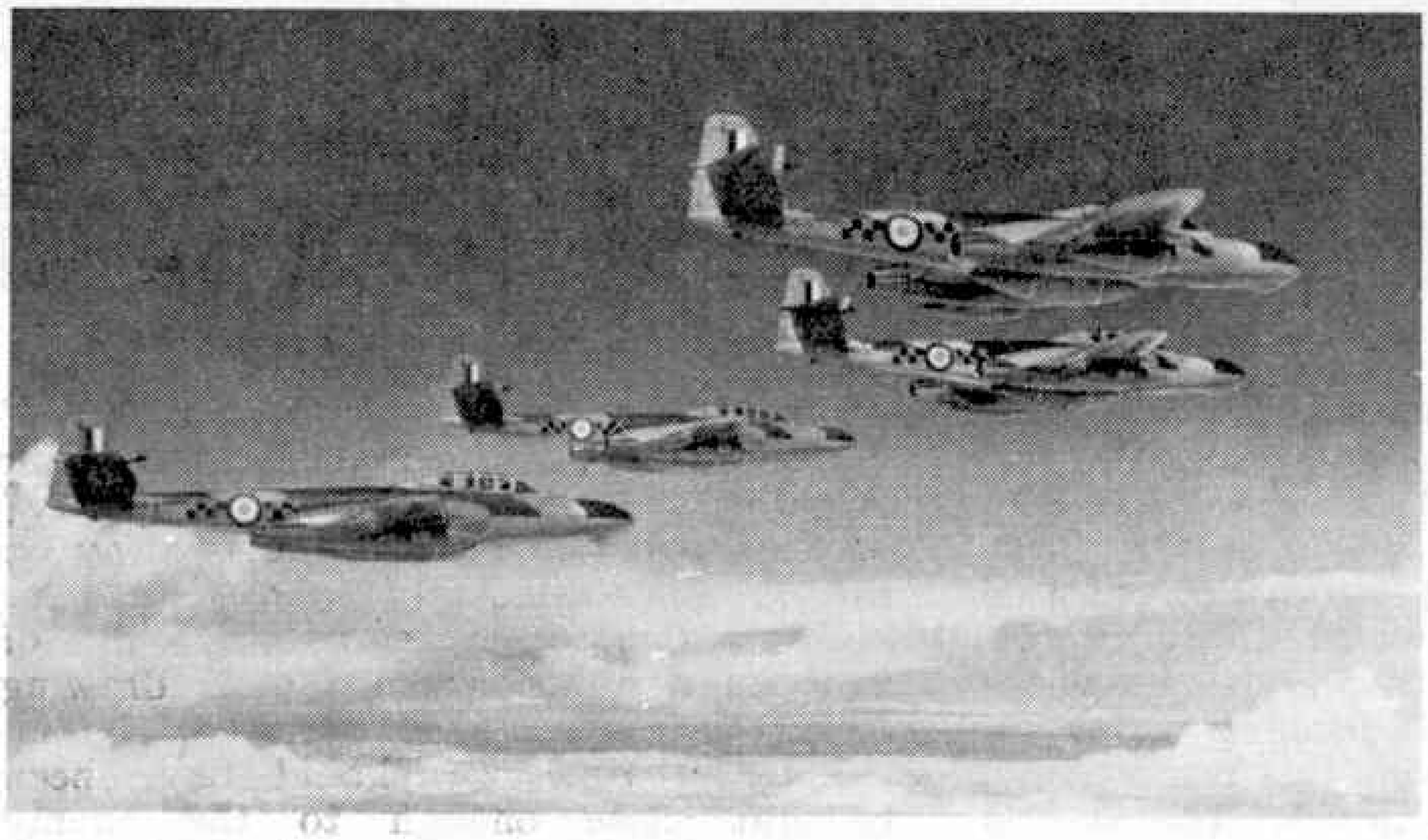
Such is the pattern of a night interception—a pattern calling for the closest possible co-operation between pilot, navigator and ground controller. There is no room for "one-man bands" in night fighting, which demands steady, precise flying and tremendous patience and concentration. The more spectacular "dash and dogfight" methods of the day-fighter boys have no part in it; and no more than a few seconds of accurate, deadly gunfire can normally be expected during each long, lonely patrol.

The fact that night fighting involves such complete understanding and high standard of training from its crew prevented us from making a practice interception during my sortie from West Malling, for I am no navigator or radar observer. But, sitting there in the darkness, gliding along so smoothly and quietly that it was almost impossible to believe the 300 knots on the airspeed indicator, it was easy to imagine the tense excitement of a night interception.

All too soon the G.C.A. controller was beginning to "talk us down" to a landing. "You are seven miles from the airfield, two degrees left of centre-line, 500 ft. below glide path. Adjust your rate of descent."

There was a slight bumpiness when Sq. Ldr. Furse extended the air brakes. The airspeed indicator dropped back quickly. "Five miles from airfield. Hold your course." More bumps as the undercarriage was lowered and the speed dropped to about 120 knots. "Four miles . . . . three miles . . . two miles . . . one mile . . . ." still the calm voice of the controller came over the R/T., only to be silenced as we glided down to a beautifully gentle landing.

Soon I was back in Sq. Ldr. Furse's office, admiring two



A flight of West Malling's Meteor N.F.11 night fighters. Photograph by courtesy of Gloster Aircraft Co. Ltd.

battered propeller blades, covered with little metal swastikas, each representing a German warplane shot down by members of his squadron in World War II.

We were joined by a young pilot from West Malling's Meteor N.F.11 squadron, and it was apparent why the Station has achieved such a high standard of efficiency, because the friendly rivalry between the Meteor and Vampire crews has to be seen to be believed. Both are famous squadrons, and the hexagon badge carried by the Meteors has adorned the fighters of many famous airmen, including two 1914–18 War V.C.'s—Billy Bishop and Micky Mannock—as well as John Cunningham in World War II, when its pilots destroyed 278 enemy aircraft.

When I visited the crew rooms, I was not surprised to find a high proportion of pilots and navigators with wartime medal ribbons on their battledress, for the kind of temperament needed for night fighting is best found in older, more experienced airmen. But the young Meteor pilot who showed me proudly over his sleek, aggressive aircraft told me that when *he* first became operational a few months ago he was just 20 years old, and his navigator only 19!

Nor should the ground crews be forgotten, for it is their devotion to duty and skill that keeps the Vampires and Meteors flying, and maintains the efficiency of the all-important radar and radio devices needed to ensure a successful interception. Many of these men are young. All seemed (*Continued on page 104*)

Photographing The Little Owl

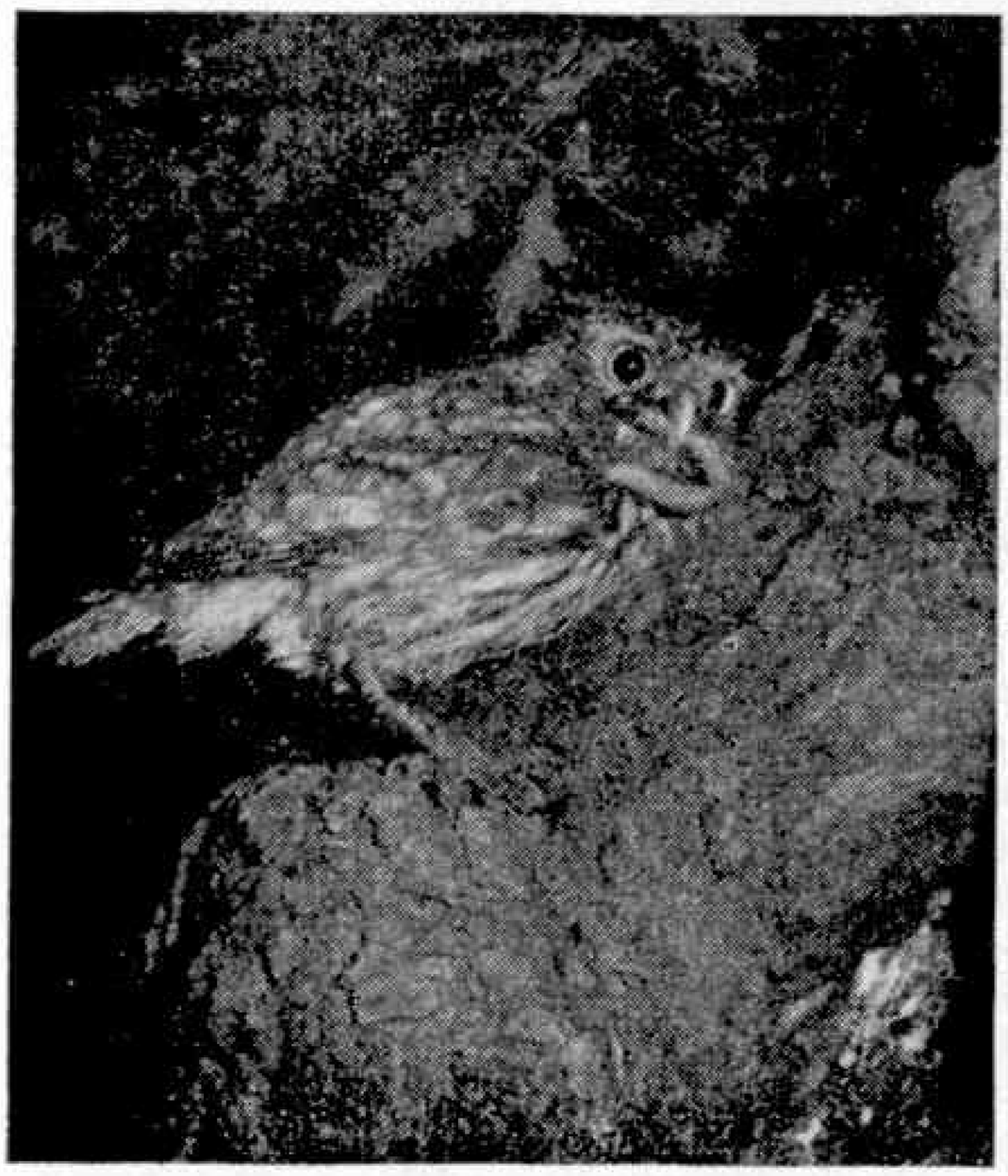
By S. Charlesworth

THE Little Owl is the smallest member of the owl family, growing to a height of about nine inches, compared with the fourteen to sixteen inches of other owls. Its plumage is grey-brown, spotted and barred with white. It is the fiercest of the owl family and will kill birds as large as itself, and it feeds chiefly on small mammals, insects and earth-worms. The eggs, which are white and oval in shape, are usually laid in clutches of from four to six, in late April or early May.

In the nest of a pair of Little Owls, which a friend and myself found in a hole of an oak tree, approximately nine feet from the ground, there were three eggs. We obtained permission from the farmer to erect a hide of trestles and planks, so that we could photograph the owl during the night, with the aid of flash equipment. This was the most suitable time for our purpose, because the owls feed their chicks after dusk.

We made several visits to the nest-hole until, at last, the chicks were hatched, and we knew that the hide could then be built. In order to avoid frightening the owls, this was built up gradually. The first move was to place the trestles in position, some distance away. During the next few days, the trestles were moved nearer to the tree. The planks were then placed on the trestles to form a platform and, to complete the hide, a cloth was tied round the upper part of the framework. When the hide was five feet from the tree, the platform was level with the nest hole.

The hide by the oak tree, from which the photograph of the Little Owl below was taken. A friend of the photographer is looking into the nest of the bird.



A Little Owl at its nest hole in an oak tree. Our photographs were taken by the author of the accompanying article.

During the preparation period the weather had been perfect and we decided to take our photograph at the next opportunity, which was the following weekend. Unfortunately, the weather changed, and bad conditions prevented any photography for a week.

At about 10.30 p.m. on the following Saturday, I entered the hide, and in order that I could focus my camera, my friend shone a torch on the hole, where we hoped the owl would alight. My companion then departed and I remained alone in the hide.

I sat peering through a hole in the cover, and presently the chicks began chattering. Almost immediately I saw one of the owls perched on the hole, silhouetted against the night sky. Each owl returned to the hole several times, and I took a photograph the instant one alighted.

The Wanganui

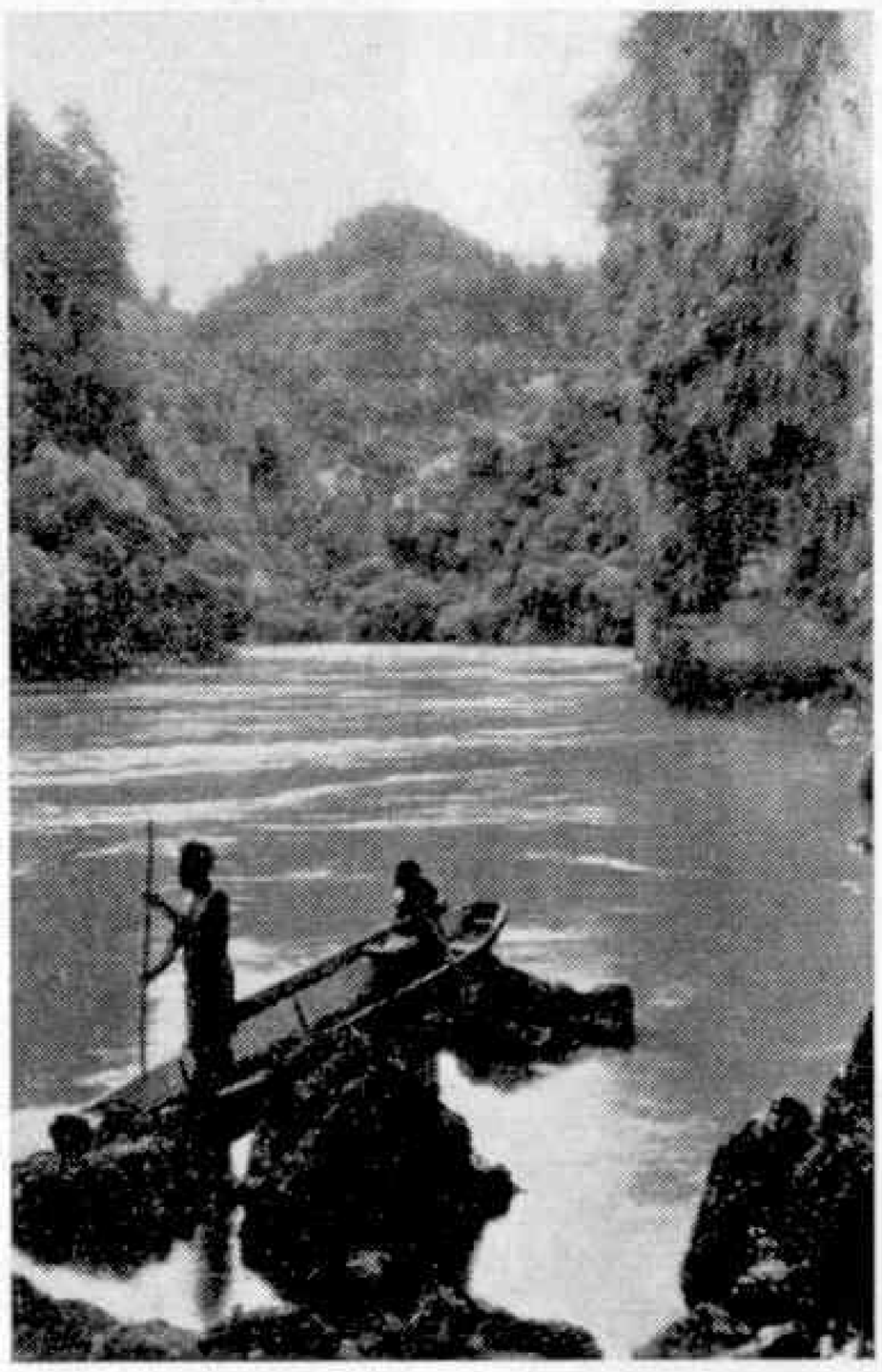
New Zealand's River of Adventure

By V. May Cottrell

BEAUTY, glamour history, Maori legend, and stirring adventure—both ancient and modern—are all closely associated with the alluring Wanganui, one of the few navigable rivers of New Zealand.

As a scenic attraction the Wanganui River has few equals, and a day spent on the little river launch exploring its upper reaches is a really delightful experience. Both banks are clothed, for the most part, with unspoiled native bush, and the river has charm under almost any weather conditions. But in high flood it is ruthless and terrifying.

It was before the advent of the white settlers to New Zealand that the Wanganui River was the scene of the most stirring adventures. For in those days there were numerous Maori pas, or fortified villages, and kaingas, or native settlements, on its banks, and many thousands of sturdy warriors up and down its entire length. These fierce, tattoed he-men frequently set off on wild forays, or skilfully planned war raids, in canoes made from hollowed-out tree trunks and manned by bands of dusky warriors.



A lovely stretch of the Wanganui River, in the North Island of New Zealand. The terrible dragon Tutaeporoporo was reputed to lurk here.

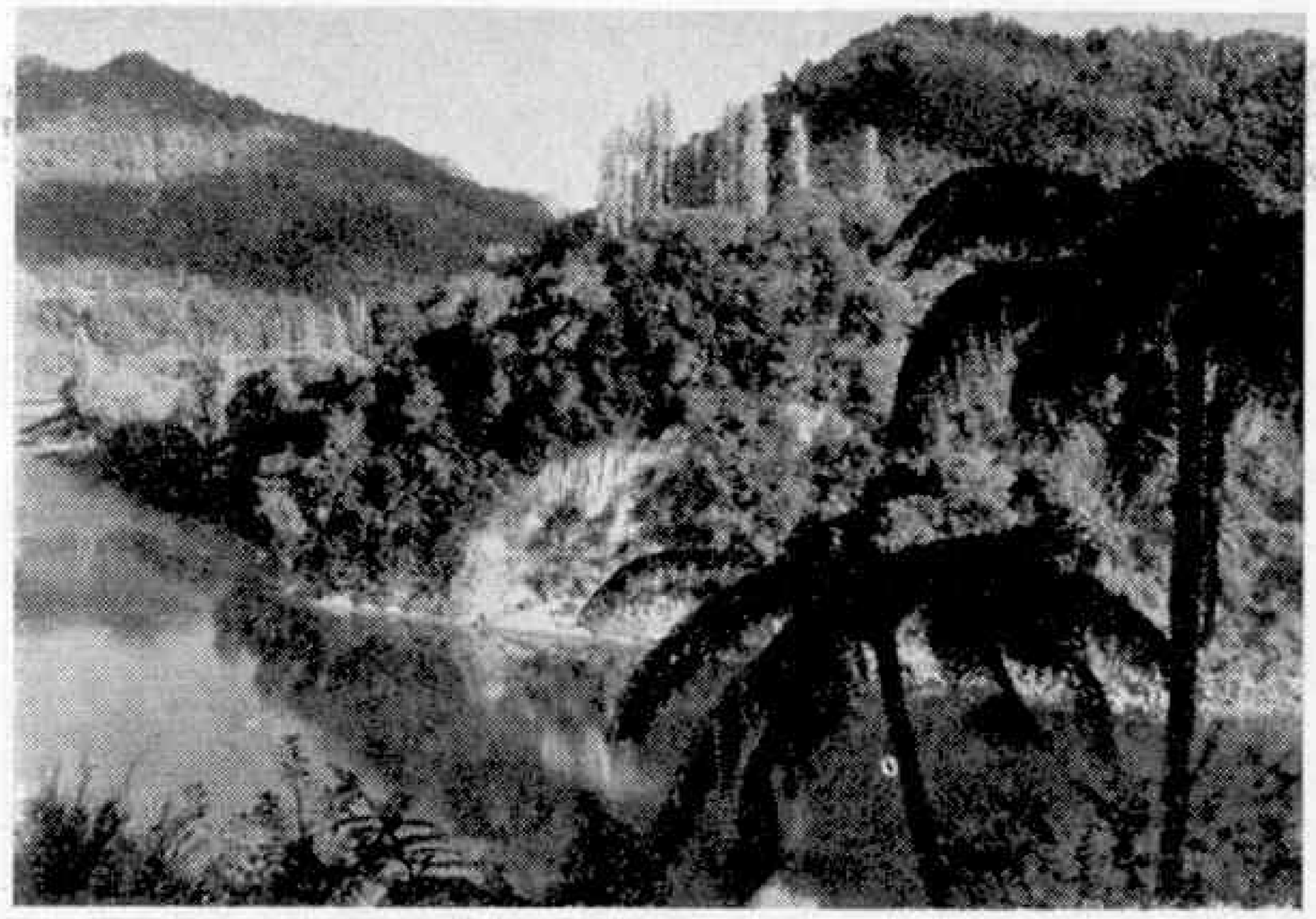
The early missionaries were among the first white men to brave the perils of the Wanganui River, in the early 1840's. In native canoes, propelled by stalwart Maoris, these courageous men and women made their difficult and dangerous way up the river. What untold hardships they must have endured, and what risks they must have run from attacks by hostile tribes concealed in the dense undergrowth along its banks!

At various points the Rev. Taylor planted cuttings of willow trees taken from Napoleon's grave at St. Helena. Many of these grew and flourished, and now form a strange contrast to the untamed native bush by which they are surrounded. In some places these historic willows are accompanied by various kinds of fruit trees, now gnarled and bent with age, and tall, stately Lombardy poplars.

A modern adventure on this river was that of three young men who, in January 1923, built a flat-bottomed boat, launched it at Taumaranui, and set forth on an exciting trip down the river to the city of Wanganui, about 150 miles distant. They were accompanied by two young women, a sister of one of the male members of the party and her friend.

As it was mid-summer, the equipment for the voyage was of the scantiest, consisting merely of a tent-fly, sleeping bags and a small quantity of provisions. This food served only for the beginning of the trip, and afterwards the party had to shoot wild pigs in the bush and catch fish in the river to keep themselves supplied with fresh meat. These they cooked over camp fires. Fresh home-made bread was obtained en route from the isolated settlers, who telephoned each other to give the probable times of arrival of the boat at the various landing stages.

These five young people brought a new thrill, and an all too brief contact with the outside world, to the lonely folk along the river. On one occasion they noticed a woman standing on a jetty and waving to them frantically with a tea towel. When they pulled alongside, the tears were streaming down her cheeks as she



Beyond the tree ferns is the river, with its imposingly wooded banks.

gazed at the two young women. She explained her emotion by saying that they were the first white women she had seen for over six months.

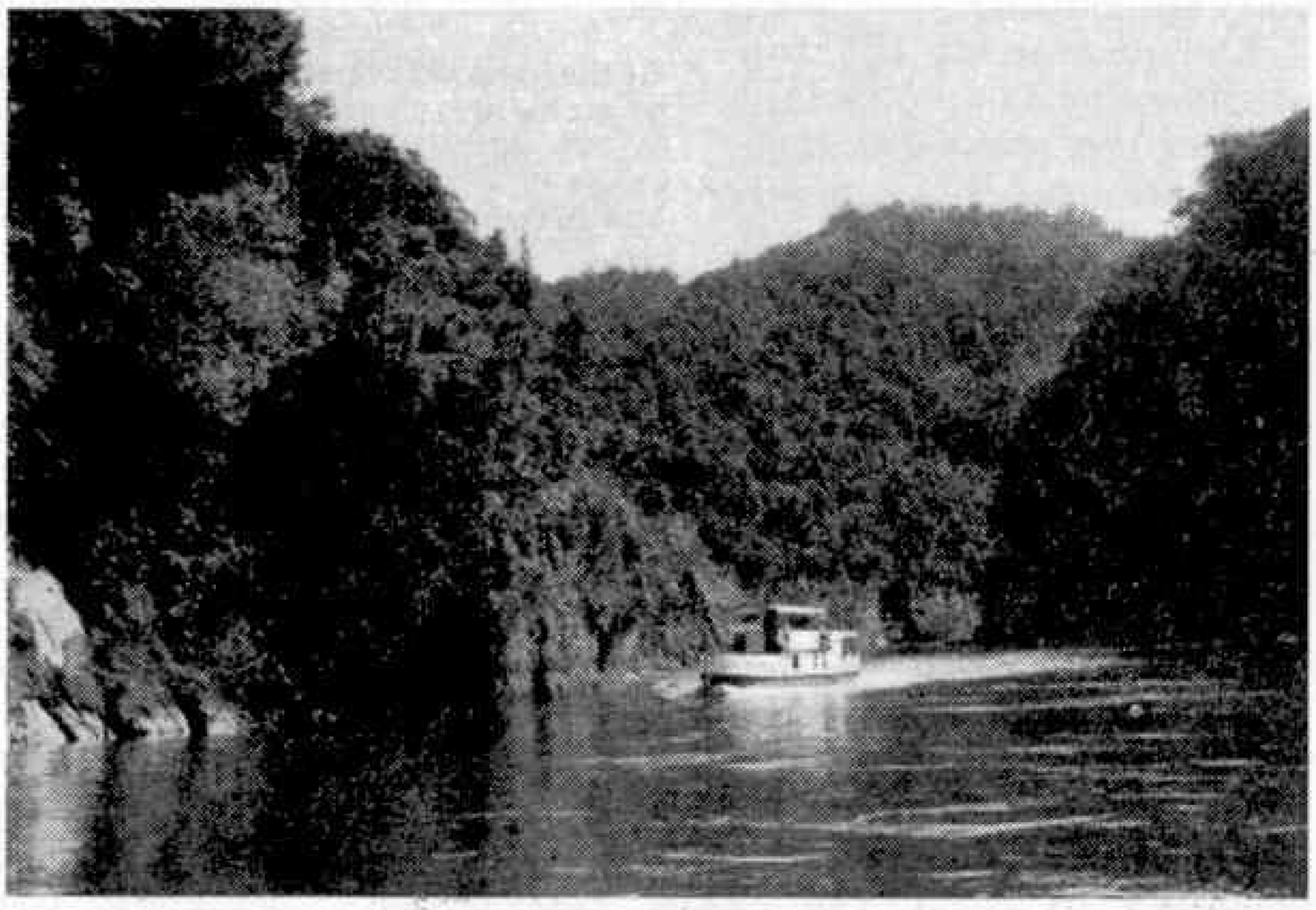
The Wanganui River has a fairly strong current, so the journey down stream was not very arduous for the rowers. In fact, except in the deep, still reaches, the boat drifted along at quite a good pace, needing only to be steered. But the numerous tricky rapids, more than 280 in number, provided some real thrills when the rushing, foaming torrent took charge of the boat, tossing it wildly about among dangerous-looking rocks. Fortunately, as a result of skilful handling, disaster was averted on each occasion, and both the boat and its occupants emerged unscathed from these exciting adventures. The whole party was always soaked to the waist after each stormy interlude, but they soon dried out in the hot summer sun.

A more recent adventure on the Wanganui River was that of a party of thirty-nine Senior Boy Scouts, accompanied by three adult leaders, with an imposing array of twenty-one canoes. There were high-school boys, part-time technical and university students, salesmen and tradesmen of all kinds, and even a bee-keeper—all eager for the thrills that were not lacking on the trip. In fact, it proved an experience to test the stamina of even the toughest and most seasoned Scout.

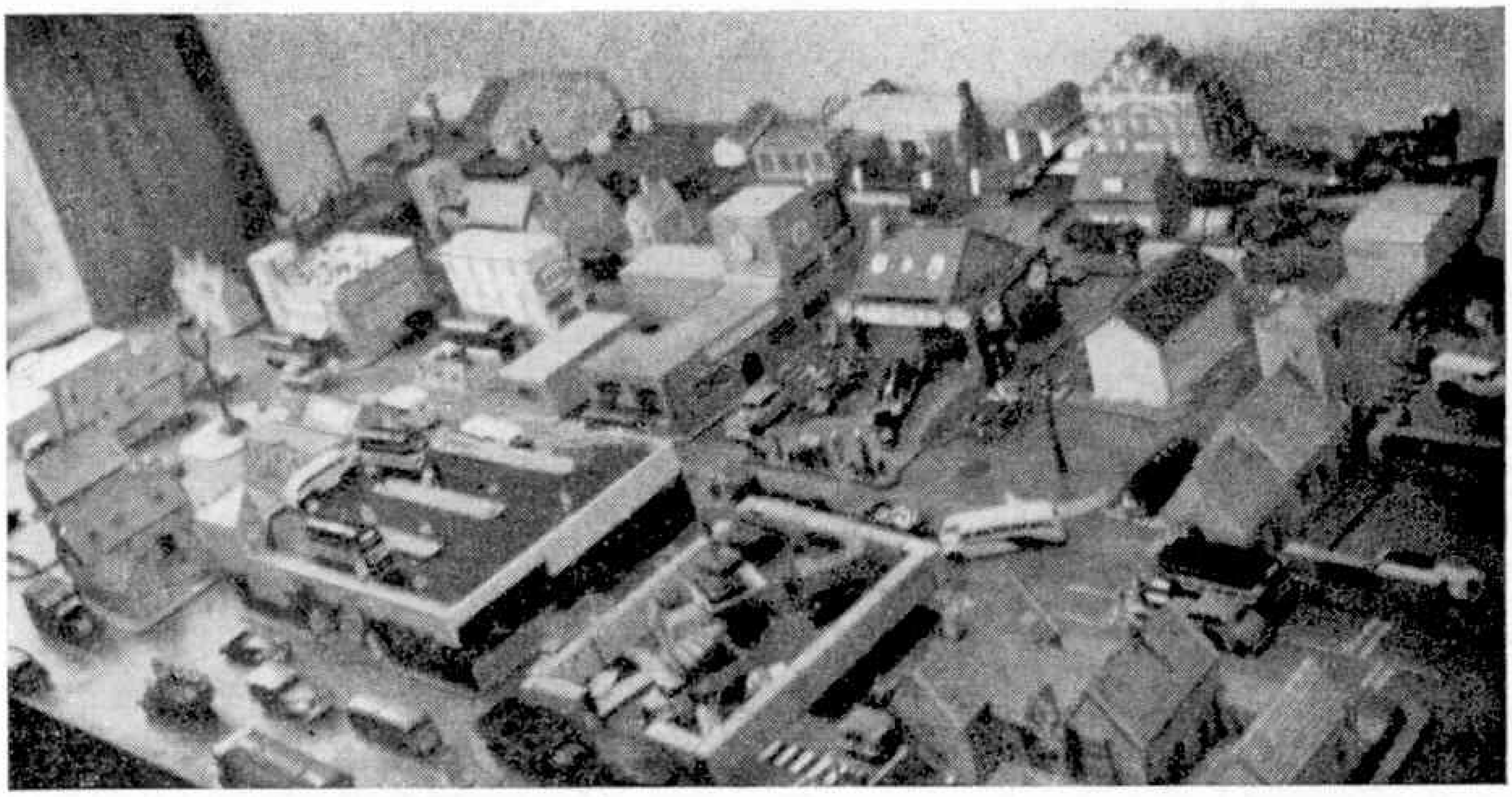
This trip was more than an adventurous pleasure jaunt and thrilling ten-day holiday—it was a training one as well. As one Scout leader remarked, "it provided great opportunities for the practical and intellectual work required for senior badges." Negotiating the many treacherous rapids proved not only exciting, but also made stern demands on both the canoeing and swimming prowess of the boys, imposing severe endurance tests on every member of the party.

The Autapu Rapids proved particularly formidable, so much so that only five of the canoes came through without capsizing. The vicious, swirling current tossed the frail craft about like so many match sticks, and it was only the strength and security of the lashings that held the camping gear and provisions fast in the overturned canoes. Rescue work in the rushing, icy water was long and arduous, but the scouts, swimming like eels, made light of it. Later they made an excellent job of patching a badly damaged canoe.

The whole ten days of interest and excitement cost the (*Continued on page 104*)



Specially built power boats of shallow draught now voyage up and down the Wanganui.



DINKY NEWS

By **THE TOYMAN**

Layouts by Readers

SINCE the Dinky News series first appeared in the *M.M.* for last August, I have illustrated and described layouts of many different kinds, from a section of a town to a canal construction scheme. They have all had one thing in common, however, in that I have designed and arranged them myself, and this month by way of a change I am describing two layouts made and operated by readers. Both represent miniature towns, but they are completely different in character and appearance.

The picture at the top of this page is an "aerial" view of the scene designed by J. Davies, Birkenhead. The layout is based on a small market town, and the illustration gives a good impression of the crowded character of the scene, so typical of its real life counterpart. The town is a mixture of old and new, blended skilfully to give just the right atmosphere of a rural community that has expanded rapidly in recent years through the addition of up-to-date buildings.

At the head of the page is a reproduction of a photograph of a busy town centre layout which can make use of a wide range of Dinky Toys. It was designed and arranged by J. Davies, Birkenhead.

Just as in real life, the rapid growth of the town has introduced many problems. As is so often the case in practice, the narrow streets of the old town were not intended to carry the heavy fast traffic brought about by modern conditions. These traffic problems have been introduced intentionally, partly for the sake of realism, but with a more interesting aim in view as well. This is to illustrate traffic dangers on the streets of a busy town, and the layout is put to splendid use in developing a sense of road safety in the minds of young friends of the designer, and training them in observing the simple rules they should follow.

Mr. Davies is fortunate in having a large area available in which to develop the layout, which is laid on a specially constructed table 8 ft. by 4 ft. made from sheet aluminium. The town is completely self-contained, and has its own church, hotel, cinema, public buildings and bus station. There is a small farm at one corner of the layout, and a recent and very popular addition is a motor racing circuit made specially to take advantage of the new Dinky Toys racing cars.

By far the most impressive building is a bus terminal station of the most up-to-date kind, with loading and unloading platforms on the roof, which is reached by a long sloping approach. The cinema has an open-air roof cafe for the benefit of the town's inhabitants on fine days, and the picture programmes are "changed" regularly, as indicated by the bills displayed outside. Material for these bills is obtained

from cinema advertisements in newspapers.

Dinky Toys on the layout? There are certainly plenty of these, for about 185 of them are available for use in the scene. This ensures never-ending variety in play schemes, all of which are full of life. An example is the fine use made of a large garage and filling station to service the motor vehicles of all kinds that run on the layout. At night the scene can be illuminated by 15 small bulbs operated from the mains through a transformer, and mounted on lamp standards and suitable buildings.

The second picture is a general view of Lightpool, a small town designed and operated by Mr. R. Walker, Surbiton. It is rather smaller than the layout already described, occupying a space 6 ft. 6 in. by 4 ft. 6 in., but is no less interesting. An outstanding feature is that the complete scene is laid out-of-doors, and is actually situated on the flat roof of an old brick air-raid shelter. This is the first example of a permanent outdoor Dinky Toys layout that has been brought to my notice, and of course the structural features of the scene must be very strongly made to stand up to all kinds of weather.

The town has a church, bus station, public library, combined fire and police stations and a railway station. The main road through the town crosses the railway tracks by the realistic bridge seen in the foreground of the picture. There are 12 roads in all, many of them fitted with "cats-eyes" to mark the centre, and all named as in real life. Traffic conditions are well catered for, with roundabouts, dividing islands, and a modern touch supplied by zebra pedestrian crossings.

The construction of the buildings was very carefully planned and carried out. Most of them were made by pouring cement into wooden moulds and letting the mixture harden. The moulds were then removed and the buildings finished with a layer of fine cement applied by hand. Before this layer dried "windows" in the form of small mirrors were inserted. The bus garage and the fire station were made with small glazed tiles.

Work on the layout is of course dependent on weather conditions, and a good deal remains to be done before the scene is completed. A school and a motor sales service station are planned, and several buildings are still to be painted. The layout has already provided its designer with many hours of pleasure both in arranging the scene and in operating the road services. About 40 Dinky Toys cars, lorries and buses are in regular use on the roads, and the well planned arrangement enables many interesting operating schemes to be carried out.

The layouts I have described in past issues have encouraged many collectors to experiment with Dinky Toys scenes, and I can assure all readers who have tried schemes of this kind that I shall be glad to know about them, no matter how simple the arrangement. If photographs can be obtained, so much the better, and I hope to include more descriptions of readers' layouts again in these pages in future issues.

The illustration below shows another attractive layout of a more simple nature. This is the work of Reg Walker, Surbiton.

The Lambretta, one of the interesting scooters of today.

On the Road

By J. Dewar McLintock

I WENT, of course, to the Motor Cycle Show in November. I thought it beat the Motor Show for sheer technical interest, and it is so pleasant to be able to get near things and peer at them without a milling crowd driving one mad. The greatest interest lay in the autocycles and lightweights. Some of the power units used in the latter are really fascinating, and represent small scale engineering at its best. Those pistons are lovely to look at—little bigger in diameter than a penny—and the tiny carburetters remind one of those on model car and launch engines.

The lightweight motorcycles are meant for more serious work, and most of them have very potent motors, in spite of their small size. The modern lightweight does not look at all like the single-geared belt-driven Levis on which I started my motor cycling in my sixth form days! Probably the most notable thing about the modern counterpart is the use of efficient springing, fore-and-aft. I had a New Imperial once—a 1922 model—which had so-called rear springing, contrived with a single sad-looking coil under the saddle, but this modern springing is something far more scientific. It depends upon the use of hydraulic plungers and pivoted forks, and really gets results.

One or two of the more luxurious lightweights are fitted with pivoted forks at the front as well. This is a far more effective way of smoothing the rider's path than is the traditional method of having a single spring and top links, but that method has in any case almost become obsolete in view of the wide use of the type of telescopic fork used on larger models of motorcycle.

There were some very interesting motor scooters. The Oscar, for example, is a new British venture with a tubular "chassis" and glass-fibre superstructure. You may remember that I described the processes involved in glass-fibre production recently, and the same techniques are used in this case, the result being a remarkably strong assembly of very light weight.

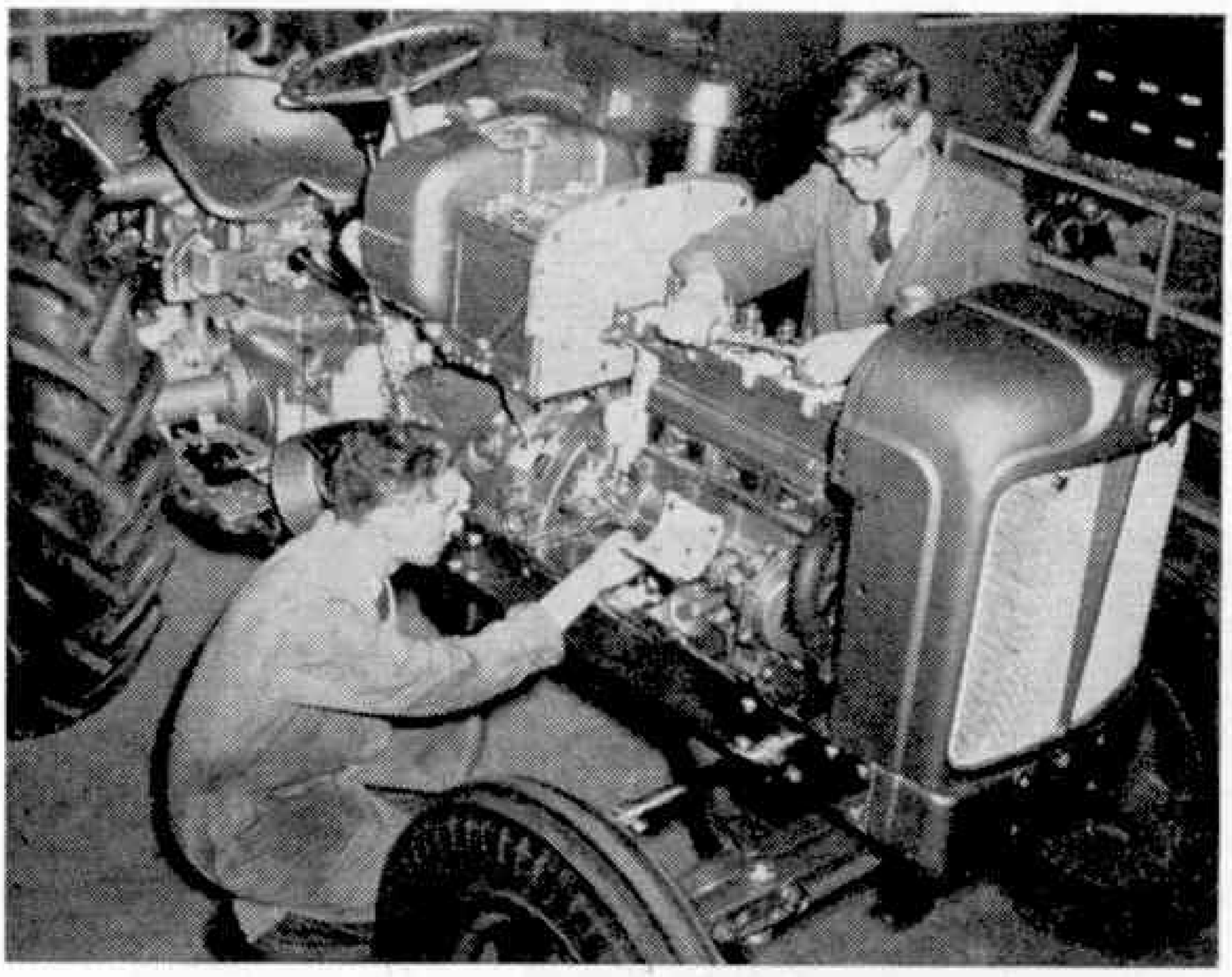
The Corgi and the Vespa were to be seen too. I tried the latter many months ago, and found it to be a powerful yet highly manageable means of transport. The Lambretta caused a great deal of interest, particularly in view of its combined engine, transmission and rear suspension unit.

All the famous high-performance machines were on view. I was particularly attracted by the Nortons, and by the racing and trials A.J.S. machines, with their hub-width brake drums, and great stiff engine and gearbox castings. Then there was the husky Vincent Black Shadow, that machine that simply stands for mile-eating in a big way.

By the way, did some of you feel a creative urge when you saw the wonderful display of models of motorcycles on the Auto-Cycle Union stand? These excellent people have thrown open a competition for the best models of motorcycles in three age-classes—pioneer, vintage and modern—and it is open to anyone here or overseas. They stipulate that models shall be good replicas of the real thing, but need not be moving or working models, nor absolutely to scale. The prize-winning entries will be exhibited at the 1954 Motor Cycle Show.

Talking of models, I recently visited a factory in Guildford, Surrey, where they make perfect scale replicas of Austin, Morris and Vauxhall cars, driven by a

tiny electric motor and torch batteries. What astonished me was the resemblance to a full-scale car production set-up. These people have proper assembly lines, a press shop, all kinds of ingenious jigs and tools, etc. There is even a miniature test track! To see such things made is to marvel at modern methods of quantity production even on the miniature scale.



Boys of the Ford Trade School putting the finishing touches to a cutaway model of the Fordson Major Diesel shown at Smithfield.

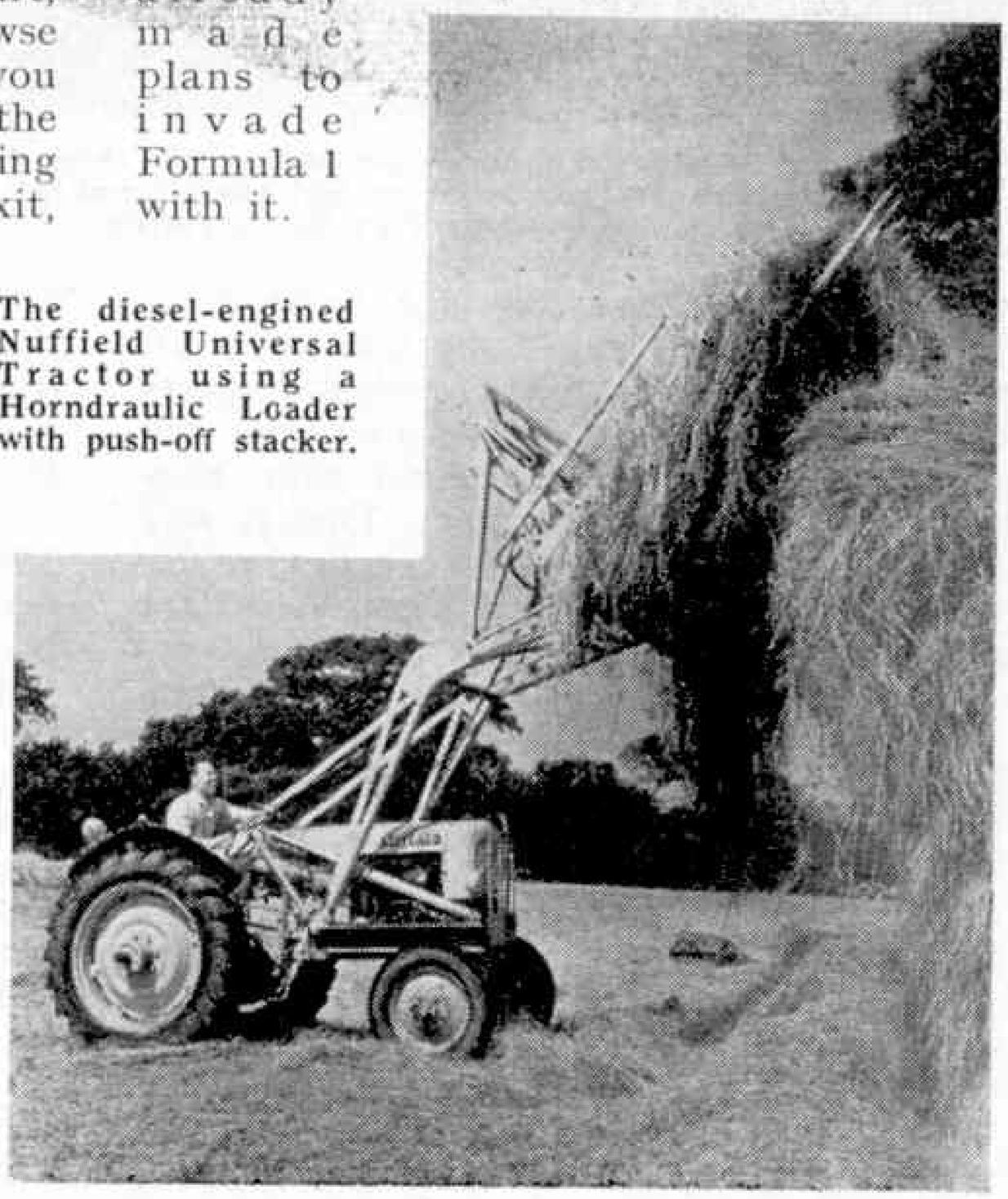
At the Smithfield Show at Earl's Court, in December, I enjoyed my usual browse round the mechanical things. As you may know, I walk very warily round the hooved exhibits at that function, keeping a weather eye open for the nearest exit, but when I come to the wheeled devices I peer and poke at them as though they were live specimens. Among those that particularly attracted me was a device called the Merton Overloader—perhaps an unfortunate title where the loading-up of farm lorries is concerned, but also very suitably descriptive of its function of picking up large quantities of material, transporting it if necessary, then dumping it backwards over its shoulder so to speak!

What it amounts to is a travelling shovel mounted on top of a Fordson Major. The over-loading principle enables the device to shuttle to and fro between stockpile and vehicle in a straight line. I remember hearing of this device being used to unload bulk sugar from ships' holds some time ago, and it certainly seems to have great possibilities. What a pleasing subject for model-making, too! The more I see of modern mechanical-handling plant, the more I see it as potential material for reproduction in miniature.

I liked also the new Singer tractor. It is made by the creators of the famous S.M. 1500 and Singer Roadster cars, but has a Ford 10 h.p. engine, from which it will be gathered that it is a light tractor. Yes, but it develops 18 b.h.p. at the governed speed, and is therefore quite husky for its size, and of course, it has the advantage of great economy. I think I should rather like to be turned loose in a field with that little fellow.

Don't you always admire those cutaway exhibits at shows? My picture shows two chaps doing this kind of work, which is an exercise in ingenuity as well as skilled engineering. Fords, of course, are very keen on the training of young men for industry, and they do a very good job of it.

Are you all keeping an eye on "form" for this year's Grand Prix racing, by the way? Watch any cars with the new 2½-litre Coventry Climax engine . . . Kiefts have already made plans to invade Formula 1 with it.



The diesel-engined Nuffield Universal Tractor using a Horndraulic Loader with push-off stacker.

Rain to Order

By David Bowen, F.R.Met.S.

IT has now been established beyond all doubt that, in many parts of the world, man can control the weather of a particular region by increasing its natural rainfall. But only very recently have the claims put forward by the experimenters found general acceptance.

No one can make rain if there are no clouds in the sky, however, and not all cloud formations are suitable for "seeding." Only those that extend vertically into the atmosphere and are towering or thick in appearance are of value. So man does not really "make" rain, but rather triggers the rainfall of potential rainclouds and makes them yield more water than they would do in the normal way. That is why the commercial operators in this field refuse to be known as rainmakers; they are *rain increasers*.

In Britain the most suitable clouds for seeding, like these cumulus galleons over Glamaig, tend to occur just before or just after the periods of greatest rainfall. Photograph by W. A. Poucher.

The most successful rain increasers are, without exception, all American. There is a reason for this. While British, Commonwealth and certain European scientists have been content to experiment on a small scale, the American pioneers have done so on a large scale.

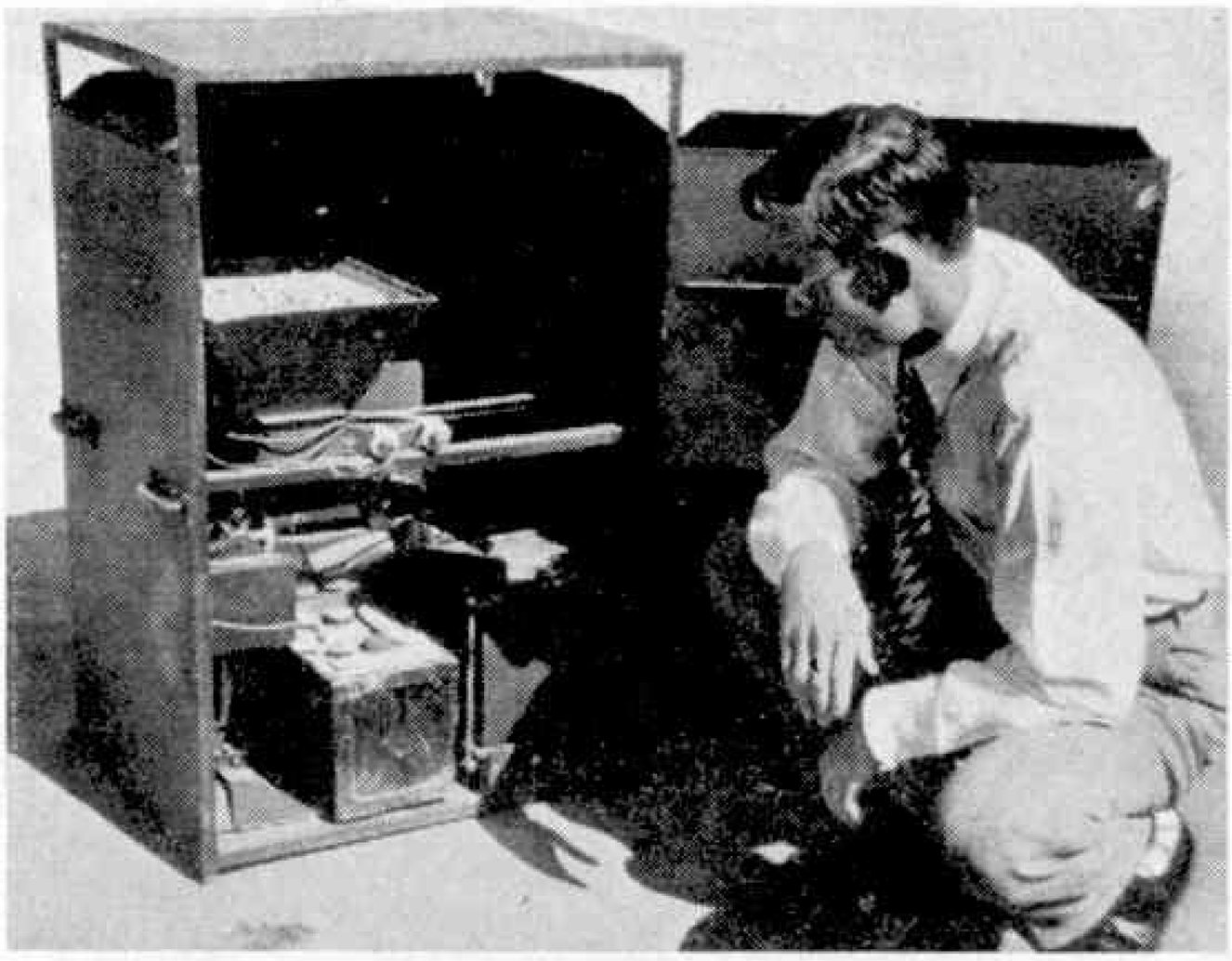
The British attitude has been: "Let us seed this or that cloud, and watch carefully to see whether the one selected is made to precipitate its moisture while the surrounding ones do not." The Americans, on the other hand, have never believed in "chasing local clouds up dry gullies," as one scientist put it. Their method has been to approach drought-ridden farmers or water board authorities, and offer to increase the natural rainfall over their lands, or over the river catchment areas concerned; over a period of time varying from months to several years. Then, on going ahead with their work, they seeded only the larger cloud belts and squeezed out of them the maximum possible amount of moisture. They claimed to have proved their experiments successful when, after a period of time had elapsed, the rain that had fallen since the experiments began was consistently above the average rainfall for the region.

Sceptics, however, insisted: "You cannot be perfectly sure that the rain that fell would not have fallen anyway." This point of view was very prevalent among British meteorologists, even during the early 1950s, but the commercial operators have now produced such a wealth of statistics that they can hardly be doubted any longer.

A highly successful rain increaser, Dr. Irving P. Krick, who was war-time chief forecaster to General Eisenhower, has brought extra rainfall, not only to his native Colorado, but to the dry areas of Spain and the Mediterranean. For political reasons he was not able to negotiate any long-term projects in Africa, but he will soon be carrying out contracts for the Israeli Government and possibly for countries even farther afield.

Dr. Krick emphasises that the days of seeding the clouds from the air ended, or should have ended, long ago, for it is much more effective to seed them from the ground.

Dr. Krick's method is to feed suitable cloud formations with silver iodide crystals, which have the effect of attracting the clouds' tiny moisture droplets, so that drops are soon formed that are heavy enough to fall to the ground as rain.



A portable silver iodide burner for generating artificial rain. In the form of a smoke the iodide is fed into the clouds, providing 30 quadrillion tiny particles every minute, each of which can attract moisture to become a raindrop.

This work can be carried out on the grand scale, for in the form of smoke the iodide particles can be fed into the clouds at the rate of 30 quadrillion a minute from a single generator or "burner" on the ground.

Silver iodide, admittedly, is effective through a smaller temperature range inside the clouds than the solid carbon dioxide or "dry ice," used in the first experiments. But, unlike iodide, dry ice cannot be released from the ground.

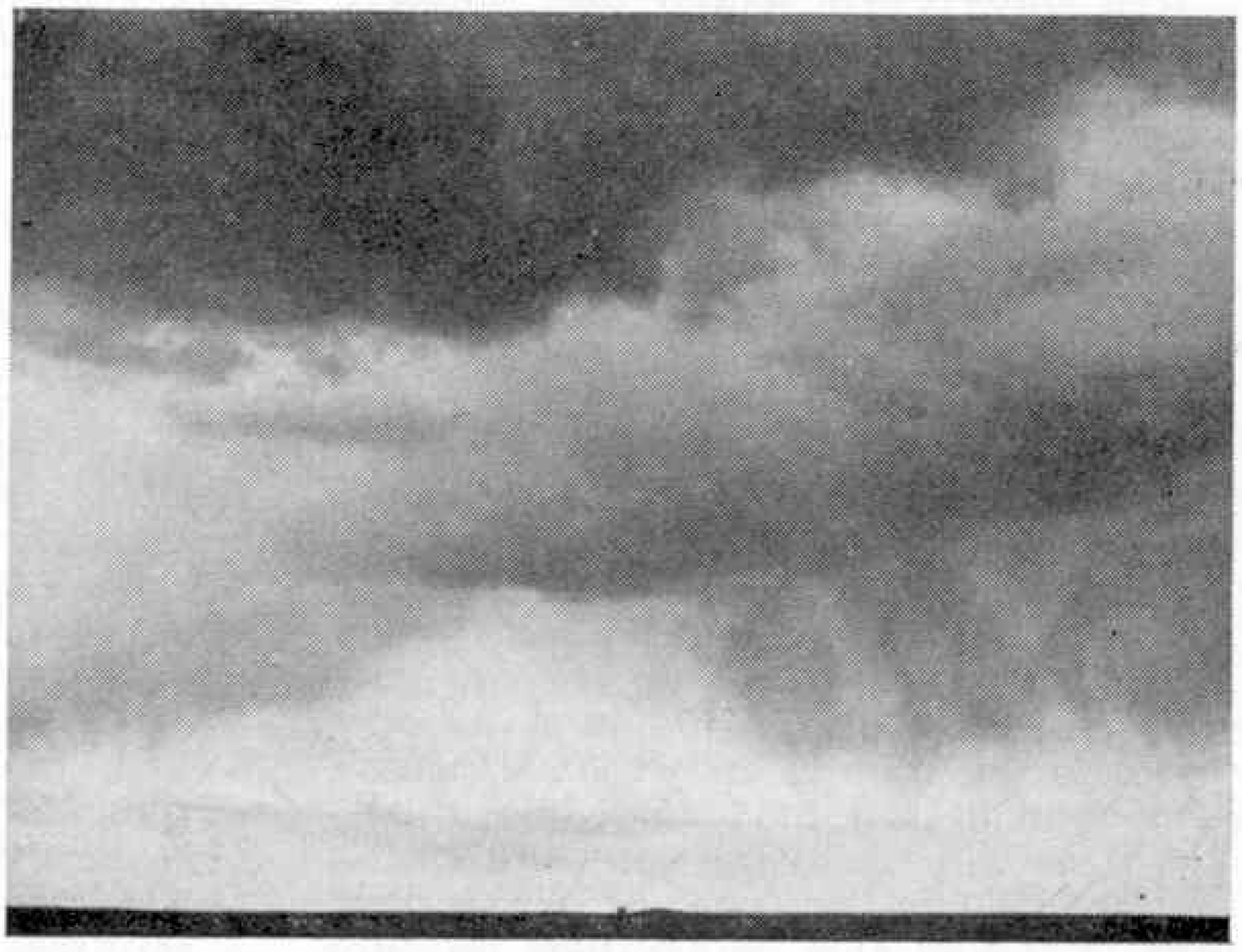
It must be remembered too that the larger firms dealing in rain increasing have up to 100 iodide generators in action, many of which are mobile and can be operated from light vans, and can also be moved at will to obtain the maximum efficiency while each operation is in progress.

Some idea of how effective silver iodide seeding really is can be seen from the following details, which were issued only recently:

In June 1950, in East Washington, seeding was carried out to provide extra rainfall for some large wheat ranchers near Prosser. During that month there were three periods favourable for operations, 6th to 8th, 11th to 12th and 16th to 17th. Over the "target" area the rainfall was four to five times as much as the normal June expectancy during the first two seeded periods, but in the adjacent areas unaffected by the seeding it was 60 to 100 per cent. of the normal. No seeding was carried out during the third period, and the result was that the rainfall was erratic and not, in the main, over the target area.

Successes of this nature are helped by the pre-operational research that is always carried out. This includes a study of the historical weather records of the area concerned for each season of the year, and a thorough assessment of the district's economy in relation to the potentialities for rain increase. Only when the cash value of the seeding operations is likely to be much greater than the estimated cost is the work actually carried out.

In the case of the Washington experiments the result was that the final harvest yielded approximately 20 bushels per acre, as against the normal of 7–8 bushels



A cloud over the prairies in Wyoming, photographed immediately after seeding. The illustrations on this page are reproduced by courtesy of Imcos Ltd.

per acre. As the target area covered approximately 100,000 acres, half of which can be assumed to have been fallow, the value of the week's operations was approximately a million dollars. This calculation is based on a price of two dollars for each bushel of wheat.

Operators, however, emphasise that it is not advisable to judge some of the experiments until a considerable period has elapsed, for in marginal rainfall regions the opportunities for seeding are fewer. Benefits, however, are likely to be cumulative, particularly in areas where there are schemes for irrigation, and it is in these regions, where the rainfall is as low as 10—15 inches, that the value of cloud-seeding is the greatest. An increase of half an inch of rainfall in the dry Mallee district of Victoria, Australia, should, for example, according to the official calculations, be worth a million pounds sterling to the annual wheat yield. But extra rain must be timed to coincide with the wheat's initial growth period in August and September.

Cloud with little or no vertical development that is unsuitable for seeding. Photograph by courtesy of Imcos Ltd.

It is unfortunate indeed that no large scale commercial experiments have yet been carried out in Australia or South Africa, although doubtless they will be within the foreseeable future.

Some remarkable experiments in the Madrid area and in a part of north-east Spain were begun in May 1953, however. They were remarkable in that, although the opportunities for seeding were very few, the maximum precipitation occurred in the target areas for each month since the seeding began.

Britain's traditionally damp climate is not so damp that we would not benefit from similar operations here, for droughts are always very harassing in a country that is unable to grow more than a fraction each year of the food that it requires. Yet there are too many problems facing the British rain increasers to make their work a practicable proposition on any useful scale. Perhaps the greatest of these problems is that the best times for seeding occur just before or just after the periods of maximum natural rainfall, and in most counties of Britain, even during a drought, there might be more people opposing extra rainfall than there were desiring it. In large countries, where the agricultural holdings are proportionately larger, and where a farmer is not likely to give his town neighbours some of his extra rainfall, it is a very different matter.

Commercial meteorologists admit that great care is needed in seeding the clouds, and they must of course be careful not to give extra rain where it is not wanted. But they deny the allegation that seeding in one area deprives another of its natural rainfall. Only the very narrow strip to the leeward of the operations is deprived in this way when normal amounts of seeding are carried out.

New experiments in weather control are of even greater interest than many of the earlier ones. Schemes are now being evolved to prevent, or at least reduce, the terrible damage done to crops by hail and floods. These experiments began when it was seen that all seeded clouds gave a smooth, even pattern of rainfall, in contrast to the often erratic rainfall that occurred from similar clouds which were not seeded. Obviously, the effect of the seeding had been to increase the number of raindrops in the large storm clouds, and, at the same time, to decrease their size.

Scientists now believe that an efficient and mobile seeding organisation could be used for the purpose (*Continued on page 79*)

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions which will be indicated, these should be ordered through a bookseller.

"THE CONQUEST OF THE AIR"

By P. L. SUMNER, B.Sc., A.F.R.AE.S. (H.M. Stationery Office 1/-)

This little handbook commemorates the completion of the first 50 years of Man's conquest of the air. In two brief chapters the author summarises the history of flying, dealing first with the early attempts by Man to copy bird flight by wearing wings and leaping from high towers and hills, the first successful man-carrying aerial voyage by de Rozier and a passenger in a Montgolfier hot-air balloon in 1783, and the eventual development of long-distance flight by airship. In the second chapter he touches upon the achievements of Lilienthal and other pioneers of glider flying during the latter half of the 19th century, and briefly surveys the development of flying in powered heavier-than-air machines that followed upon the success of the Wright Brothers in 1903; and so on to the high-speed jet aircraft of our own time.

A pictorial survey of the first 50 years of flying takes up the remainder of the booklet, and ranges from the British military airship *Gamma*, of 1911, to the Handley Page Victor crescent-wing bomber and Hawker Hunter supersonic fighter of today.

"HOW'S YOUR PET?"

By L. HUGH NEWMAN (Phœnix House 10/6)

Most youngsters, boys *and* girls alike, delight in keeping a pet, whether it be a rabbit, tortoise, or goldfish. Many make a success of rearing and maintaining their pets, but others lose interest and fail through not knowing just how to take care of their charge.

This book by a noted naturalist and Children's Hour broadcaster, who is well-known to *M.M.* readers, will end such worries. In its ten chapters Mr. Newman deals respectively with hutch pets such as rabbits, guinea pigs and mice; cage birds like canaries and parrots; domestic birds such as pigeons, doves and chickens; reptiles and amphibians, a class that includes frogs, lizards and newts; fish and pond life—both cold water fish and tropical fish; insects, a vast range that includes butterflies, moths, silkworms and beetles; cats and dogs; and larger domestic animals like goats and ponies. The two final chapters deal with the taming of wild animals such as hedgehogs, squirrels and otters, and wild birds, including kestrels, owls and gulls.

Full instruction is given on the choosing, housing, feeding and care of the wide variety of creatures dealt with. There is also advice on breeding, and a guide to the prices of the different pets; and each section ends with a list of the clubs and societies interested and a short list of books and magazines to read.

There are 25 pages of delightful half-tone illustrations.

"KNOTS AND SPLICES"

By CYRUS DAY (Adlard Coles 5/-)

The material in this handy little pocket Manual has been carefully selected from the author's more expensive books, which have become recognised as standard works on this subject. This handbook will be very useful to readers who are Scouts—especially Sea Scouts—and to all who are interested in boats and ships.

Over 80 knots and splices are described, with excellent half-tone illustrations, text and pictures combining to make it easy to understand how to make the knots and splices. There is an excellent glossary of the technical terms used in respect of knots and splices, and a good index.

"LINERS AND THEIR RECOGNITION"

By LAURENCE DUNN

"YACHTS AND THEIR RECOGNITION"

BY ADLARD COLES and D. PHILLIPS-BIRT (Adlard Coles 12/6 each)

The author of *Liners and Their Recognition* is a well-known artist in shipping circles and an expert on his subject. In this book he has compressed particulars, dimensions and recognition features of every important passenger liner of 10,000 tons gross or more in the world. It is, in fact, believed to be the only book of today which illustrates every liner or her "sister." There are over 170 photographs and over 100 drawings of ships and their distinguishing features. In some instances silhouettes also are given, to draw attention to characteristics of ships that may be confused with others of rather similar appearance.

Yachts and Their Recognition is similar in format to the above work. In it the principal yachts and classes are described, and illustrated by well over 100 photographs and drawings. The burgees of nearly 200 yacht clubs are reproduced in full colour, which enables the club to which a yacht belongs to be recognised, and the sail numbers of the yachts of the principal classes are listed, some 1,500 of them, so that a yacht may be identified by name. The book is illustrated with eight colour plates, over 100 half-tone pictures and many line drawings, and there is a very useful glossary of the yachting terms used in the book.

"A MESSAGE ROUND THE WORLD"

(Max Parrish)

This addition to the range of Parrish Colour Books for Children deals with the wonders of telephony and telegraphy, both cable and wireless, and television. The coloured drawings and simple text together explain their subject so clearly that it can be easily understood by children of 9 to 12 years, for whom the book is intended. The accuracy of text and illustrations is assured, as they have been checked and approved by the well-known firm of Cable and Wireless Ltd.

The book is available in two editions, the standard one, bound in boards, at 6/-, and a library edition, bound in cloth, price 7/6.

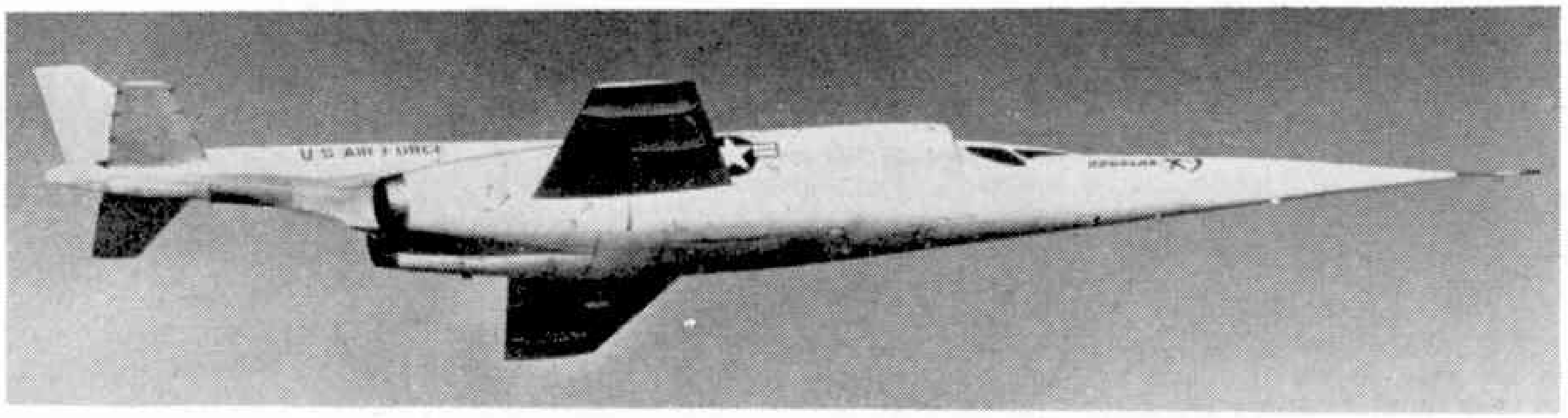
"HOW TO MAKE MODEL AIRCRAFT"

By P. G. F. CHINN (Percival Marshall 3/-)

There are now over 100,000 model aircraft enthusiasts in Great Britain, and the number is still increasing. Newcomers of all ages to this fascinating hobby will find this handbook a valuable guide. There is nothing very difficult about building and flying model aeroplanes, but to ensure success it is essential to know something of the correct methods of construction and adjustment for flying.

Until a few years ago most beginners started with rubber-driven types, but the emphasis has shifted more to small power-driven models and gliders, and therefore this book is concerned primarily with these types. The constructional chapters are based on well-known kit designs and are lavishly illustrated with "step by step" photographs taken while the models were being made. In selecting these kits the author has particularly kept in mind the young enthusiast with limited spending money, and this applies also to the chapter giving practical advice on the purchasing of used model engines.

There is a special chapter on current types of Jetex motors, and a very useful glossary of model aircraft terms.



The fantastic Douglas X-3 research aircraft. Photograph by courtesy of Douglas Aircraft Co., Inc., U.S.A.

Air News

By John W. R. Taylor

The Flying Stiletto

Soon after the Douglas X–3 research aircraft made its first flight on 20th October, 1952, we began to hear rumours that it was something altogether new—more like a V.2 rocket with flippers than an aeroplane, and so "hot" to handle that even test pilot Bill Bridgeman called it a nasty little beast that did not seem to want to stay in the air.

Now that the first photographs of the X–3 have been released by the U.S. Air Force, there is no doubt that some of the rumours were justified; for Douglas (and Bill Bridgeman!) have shown great ingenuity and courage in designing, building and flying successfully such an advanced concept. Its all-up weight and length exceed those of a fully-loaded Dakota air liner; yet the X–3's wing span is less than the span of the Dakota's tail. Its length of 66 ft. 9 in. is nearly three times its wing span of 22 ft. 8 in., resulting in an incredibly high wing loading of around 250 lb. per sq. ft. This compares with about 100 lb. per sq. ft. for the X–3's predecessor, the Douglas Skyrocket, which has achieved a speed of 1,372 m.p.h. and height of 83,235 ft.

The X–3 is powered by two Westinghouse J–34 turbojets and has been designed to fly faster than sound for periods of many minutes; unlike the Skyrocket, whose rocket-motor has a full-power endurance sufficient for only a few seconds of supersonic flight. Furthermore, it does not have to be carried to altitude under a "mother-plane," but can take off under its own power.

It carries more than half a ton of research instruments, and its skin is pierced with 850 minute holes, through which are recorded air pressures over every part of its structure. Air loads are indicated by 185 electric strain gauges, and temperatures are measured at 150 places. To protect the pilot from the blistering skin friction heat, the X–3's cockpit is refrigerated with a cooling system of tremendous capacity; and much of the airframe is built of the new metal titanium, which withstands heat and stresses that would destroy more conventional aircraft materials.

Canada's Own Jet Fighter

The Royal Canadian Air Force now have two squadrons of Avro Canada CF–100 all-weather jet fighters in service—Nos. 423 and 445—which are equipped with the Mk. 3 version of this aircraft. A third squadron is being formed and others will soon receive the newer, more powerful CF–100 Mk. 4, which is in full production at Malton, Ontario. Eventually, there will be at least nine regular CF–100 squadrons, with ten more auxiliary squadrons.

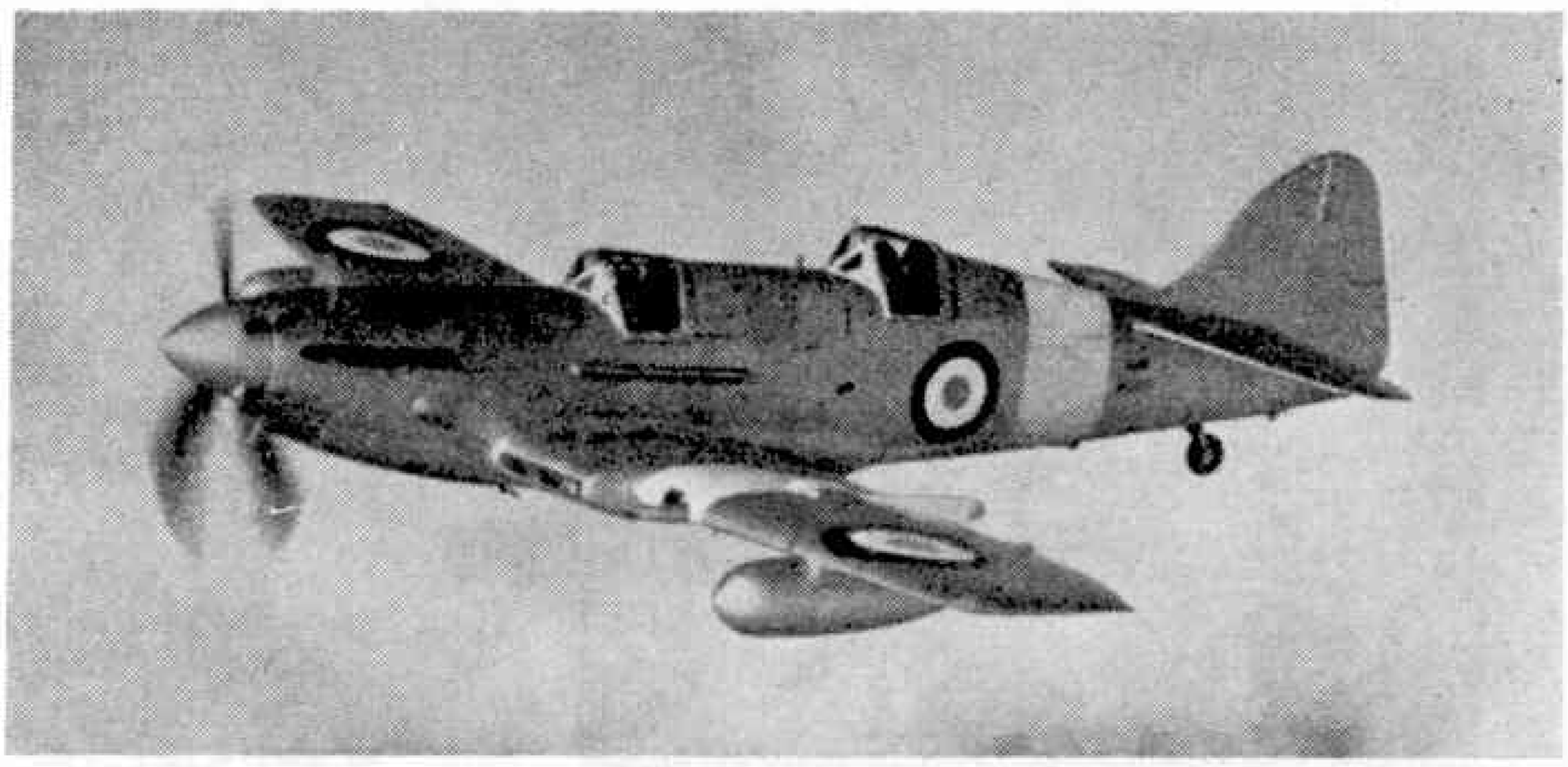
The CF–100, one of which is shown in the lower illustration on this page, flew originally with Avon engines; but production aircraft each have two Avro Canada Orenda turbojets. Only a few CF–100 Mk.2s went into service and the first true production version was the Mk.3, armed with eight .5 in. guns mounted in a neat gun-pack under the fuselage.

The Mk.4, with two 6,500 lb. thrust Orenda 9 engines, has flown faster than sound many times, and has Fairey Power Controls to improve its manœuvrability. Its armament consists of 120 folding fin rockets carried in wing-tip containers, in addition to guns; and its black nose radome houses the latest American type of automatic search and "lock-on" interceptor fire-control radar. 650 are on order.

Up she goes! Canada's new Avro CF-100 Canuck, the all-weather interceptor, taking off with the aid of six JATO bottles under its wings. Canadian National Defence Photograph.

Helicopters in Malaya

The Sikorsky HRS–2 (S–55) helicopters of No. 848 Fleet Air Arm Squadron flew more than 3,000 hours in their first 11 months of active service in Malaya. In that time they lifted nearly 9,000 troops and 170,000 lb. of freight, and evacuated 220 sick and injured soldiers from the jungle. The squadron also lowered many of the tracker dogs used by troops in Malaya to round up bandits, dropped leaflets, and inspected jungle clearings where bandits were believed to be operating.



The Fairey Firefly T.Mk.5, now being evaluated by the Royal Australian Navy. Photograph by courtesy of The Fairey Aviation Company.

"Roving Eye" Camera

A new "roving eye" camera is being developed by the Williamson Company for Britain's new high-altitude jet photo-reconnaissance aircraft. It has a special moving mirror-lens system which enables an aeroplane flying eight or nine miles above the ground to film an area so big that it would take a battery of eight conventional cameras to cover it.

The camera is divided into two parts, one of which sweeps the area to the left of the aircraft, while the other "roves" over the area to the right. A small overlap ensures coverage of the ground vertically beneath it. The "roving eye" effect is achieved by focusing each of the camera's telephoto lenses on to a pivoting mirror, which sweeps the ground, giving a wide field of coverage. The result is that, instead of getting a single narrow shot of the ground, limited by the size of the aperture, the two mirrors rove over the ground and produce a picture some 2 ft. 6 in. long by 9 in. wide. Each exposure from 50,000 ft. records about 50 sq. miles, and 200 exposures can be made on the 1,000 ft. of film held by the camera.

New Firefly

The Fairey Firefly is one of those versatile, long-suffering aircraft that seem to go on for ever, and even after 14 years of development new versions keep appearing at regular intervals. Latest is the Firefly T.Mk.5, a two-seat trainer engineered by Fairey's Australian factory at Bankstown, New South Wales.

Basically similar to the Royal Australian Navy's Firefly Mk.5 anti-submarine aircraft, the T.Mk.5 has a raised rear cockpit for an instructor, complete with dual flying controls, instead of the standard observer's cockpit. This gives an excellent forward view "over the shoulder" of the pupil, especially for deck-landing instruction. Performance is hardly affected, and the T.Mk.5 has a top speed of 360 m.p.h. and endurance of about five and a half hours.

Silver City News

Silver City Airways have ordered three more Bristol "long-nosed" Superfreighter Mk.32 aircraft for their cross-Channel car ferry service, at a cost of £300,000. They will be delivered in the Spring, and will bring to a total of 20 the company's fleet of modern post-war aircraft.

Altogether, Silver City carried nearly 40,000 vehicles and 100,000 passengers between Britain and France during 1953. The total would have been much higher if the main base at Lympne had been equipped for night flying. The Car Ferry will suffer no such restriction this year, for Silver City are building their own aerodrome—named Ferryfield—on the tip of Dungeness, and it will open in June with full facilities for 24-hr. all-weather operation. Ferry planes will then fly from Ferryfield to Le Touquet, instead of from Lympne. A completely new service will link Lympne with Calais.

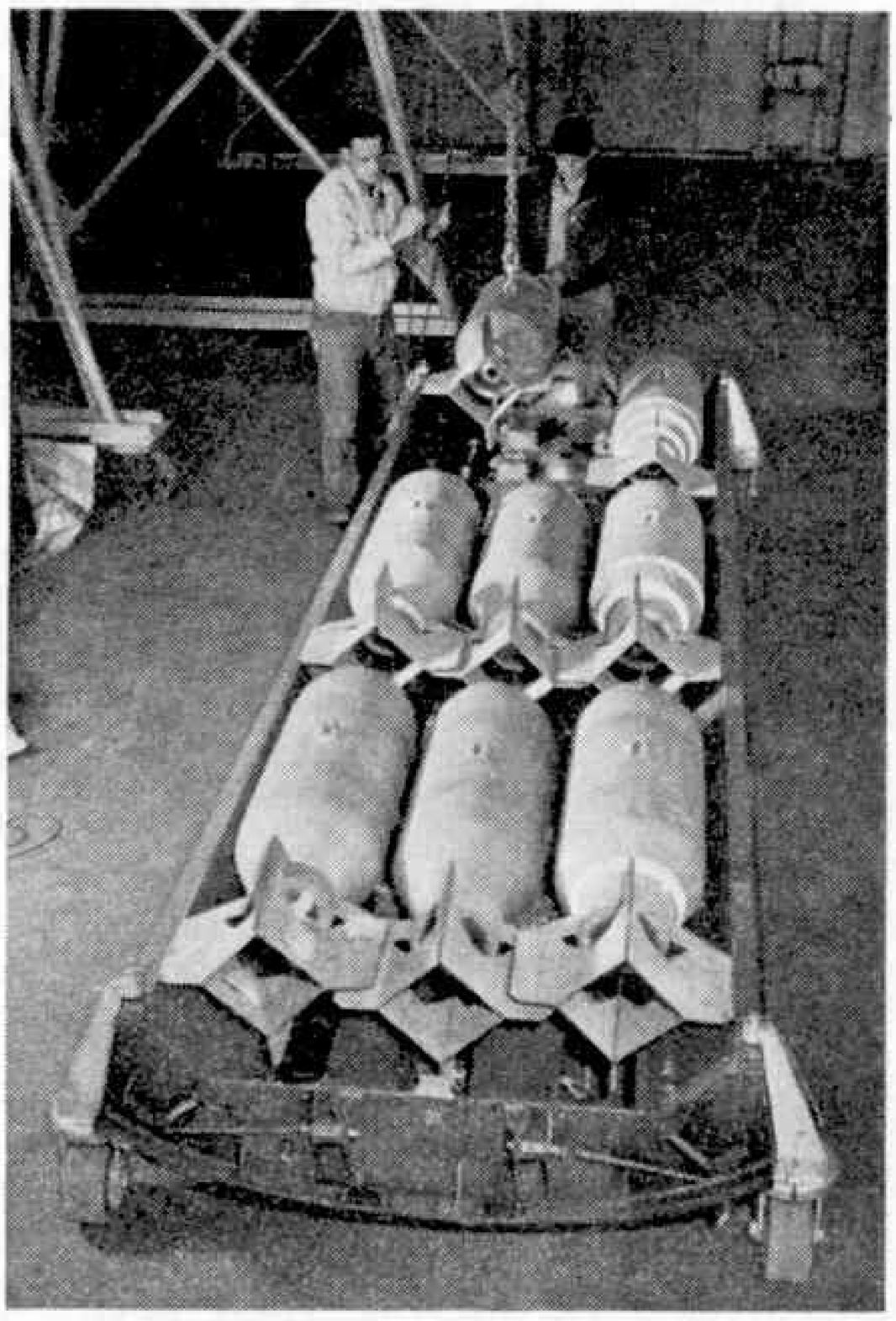
Rotating Bomb-Bay

An ingenious feature of the U.S. version of the Canberra is a special rotating bomb-bay developed by The Glenn L. Martin Company, who are building the aircraft for the U.S.A.F.

Designed to overcome problems encountered in dropping bombs from a conventional bomb-bay at high speed, the platform forms the undersurface of the fuselage in normal flight, with the bombs carried on racks attached to its upper surface, inside the aircraft. The whole thing can be rotated quickly on its fore-and-aft axis as the target is approached, exposing the bombs without creating a large opening in the fuselage. Air-actuated plungers and radius arms kick the bombs clear of their shackles, to ensure that they do not tumble or strike the aircraft.

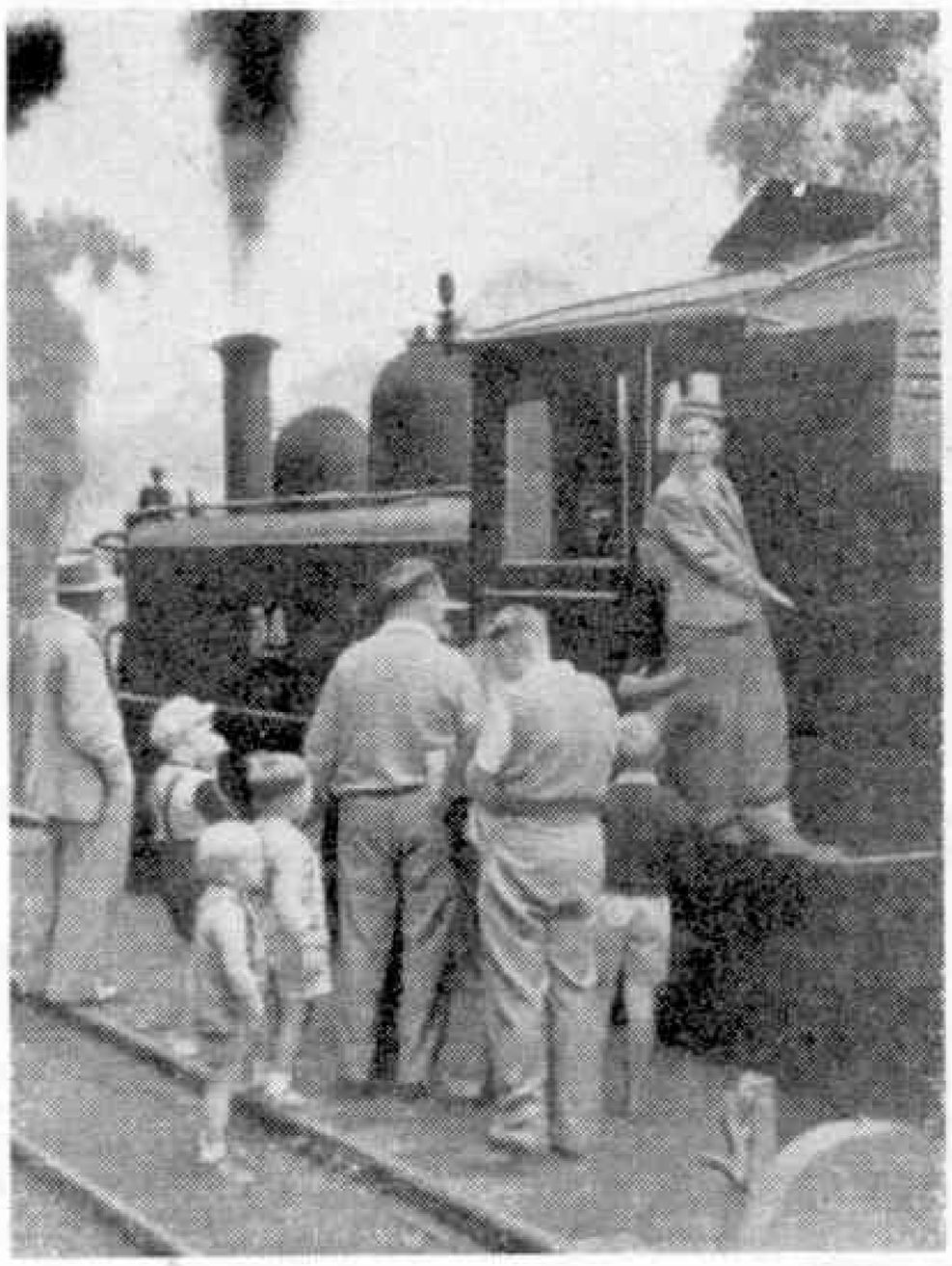
* * * *

Latest version of the Supermarine Swift off the secret list is the F.R.Mk.5 armed reconnaissance-fighter.



Rotary bomb door of U.S. version of the Canberra shown removed from the aircraft and being loaded. Moving the door about while it is on the ground is made easy by dollies fitted at the corners. Photograph by courtesy of The Glenn L. Martin Company, U.S.A.

"Puffing Billy"—



By
Leslie Hunt

—Victoria's Versatile Veteran

JUST over a hundred years ago, on 27th March 1851, the first white man "moved in" to the Blue Dandenongs. He was Frank Gardiner, a quarter-cast Australian outlaw who broke out from Pentridge Jail, stole a horse, and with a companion, set out for the Dandenongs, where the two lay low for a fortnight waiting for their hair to grow as a disguise. During this time they lived on berries and wild game, eventually cutting north-west to pick up the main Sydney road roughly 30 miles north of Melbourne.

Until the early 1890s the Dandenong Ranges were covered with dense forest and, although reasonably close to Melbourne, the area was not settled. On Cup Day and other public holidays city people would drive out in buggies, jinkers, or furniture vans, with a more adventurous stream following on horseback or high-wheel bicycles, for picnics in the shady fern gullies by the sides of rippling creeks. When the land boom burst in 1893, hundreds of men were thrown out of employment. They paraded Melbourne's streets, demanded work and threatened trouble. The Government decided to throw open the Dandenongs for selection, surveying and dividing the area into 10-acre blocks at £1 0s. 0d. per acre, and so, with the exception of a few widely-scattered families, the unemployed of the city were the first settlers in the hills.

The illustration at the head of the page shows "Puffing Billy" at the head of the train for Gembrook, the terminus of the narrow gauge line from Ferntree Gully. The trip through the Dandenongs on this line is a joyous occasion for all concerned. Climbing on the engine is Barry Hunt, formerly of Leigh-on-Sea.

The pioneers had a rough time. There was scarcely room to pitch a tent in the densely wooded ranges, and there were no roads, only cart-tracks cut into the sides of the hills, axle-deep in mud in the winter, and with granite boulders on the surface in summer. After grubbing out the stumps, following the clearing of the bush, the newcomers grew fruit and vegetables for the Melbourne market, taking two days with a horse and cart to deliver the produce —if they were lucky enough to own a horse and cart!!

It was not surprising that after a few years there was an agitation for a railway, requests being made for the broad-gauge line to be extended beyond Ferntree Gully, the terminus then, as now, of the Flinders Street electric line. But the cost of such an extension was prohibitive and so, in the late 1890s, a narrow-gauge line was started from Ferntree Gully to Gembrook. The first train operated on 20th December 1900, the engine, immediately nick-named *Puffing Billy*, pulling the first load over what must surely be the most picturesque route in all Australia.

Let us join the eager crowds on a typical trip and see for ourselves!

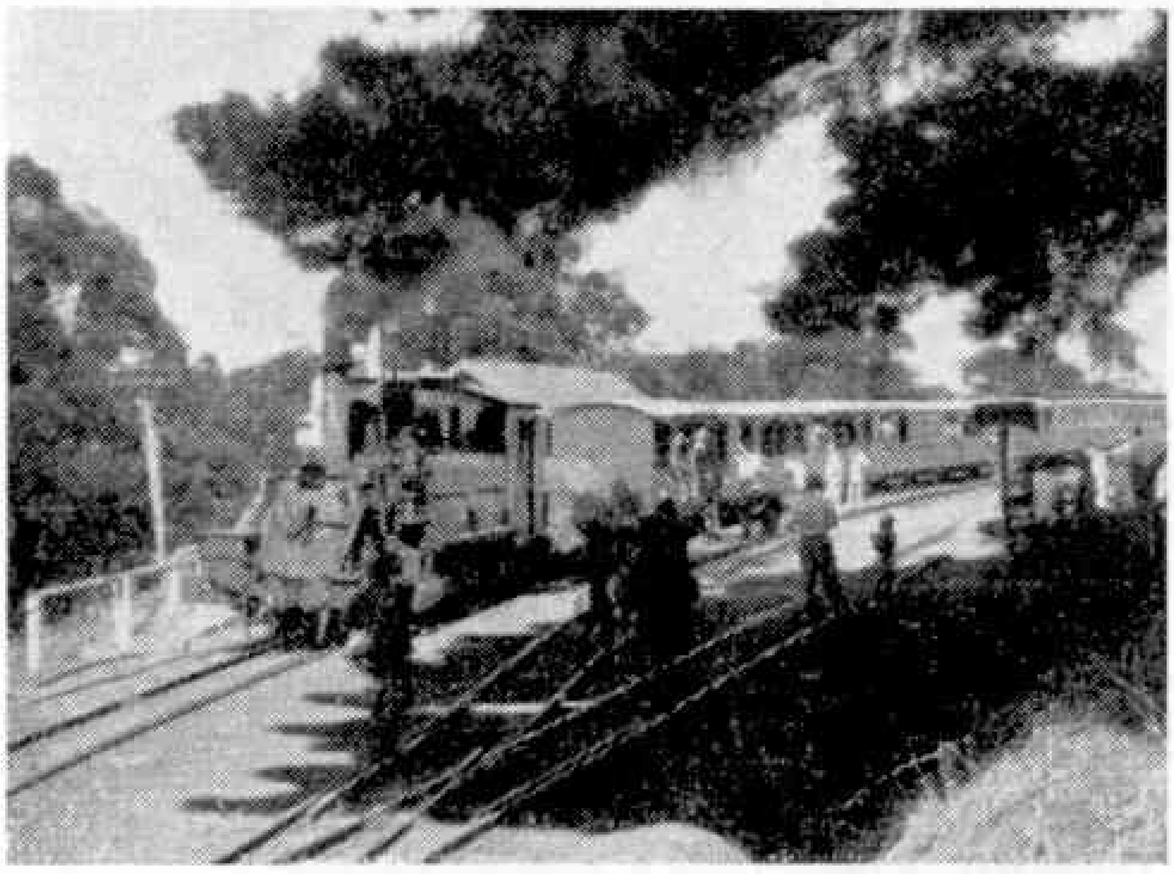
Ferntree Gully Station on a Monday or Thursday, or on most public holidays, becomes the centre of great activity. Trains from Melbourne are unloading

crowds of visitors, while "locals" are arriving by bus, car, cycle, or on foot from neighbouring townships. They meet on the special platform, where *Puffing Billy* is straining at the leash for the big climb ahead. Just after 10 o'clock the guard waves and whistles, *Billy* gives an answering toot and, with a rush of steam we leave the Gully to the cheers of Melbourne-bound passengers and others who make a regular habit of coming to see the going of the little train.

The first thing you observe is that few, if any, of the passengers are in their compartments. The footboards on either side are lined with young and old, the remainder are either on the roof—from which they will be brought down periodically by the guard, only to re-climb when his check is over—or walking along by the train, leaping on and off the footboard, picking flowers, chatting to residents of houses along the track and generally having the time of their lives.

The climb to Upwey brings us to about 700 feet above sea level and our first stop at a genuine *Puffing Billy* station with its single platform, tiny ticket-office and, of course, a crowd of newcomers. As the train stops, most of the passengers crowd round the engine to watch the re-fuelling by the fireman and, if you are lucky, you may be invited to travel on the footplate or in the cab for the next leg of the journey. The driver and his mate seem to know a really keen fan and the cab is always full on these runs. Those who cannot be crowded into the cab are sure to remain in the first carriages—or on them—watching for their opportunity to secure an invitation to ride on the engine.

The whistle has blown again and after



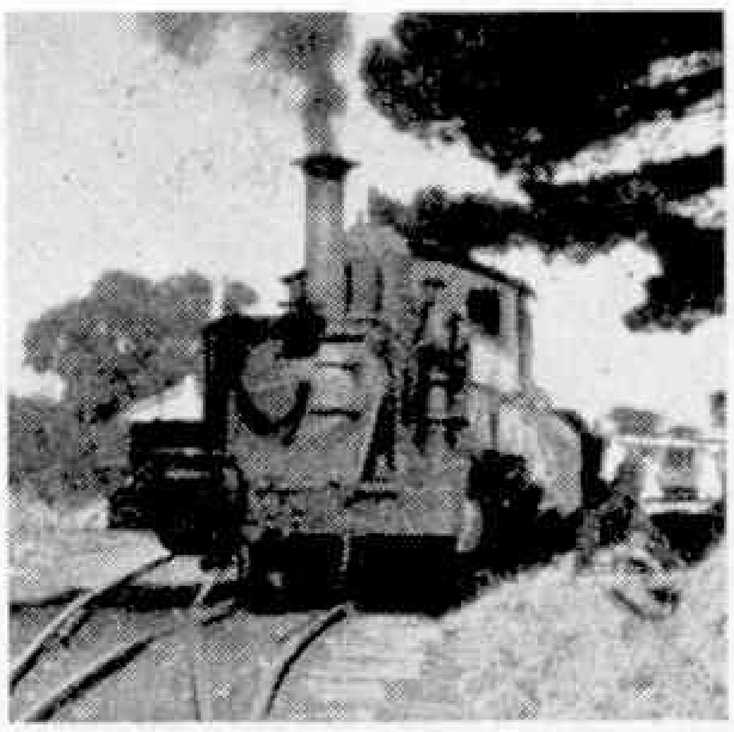
"Puffing Billy" halts at Belgrave.

giving his customary reply, *Puffing Billy* steams towards Tecoma, crossing the main road, with crowds watching and waving as we pass over the trestle bridge spanning the creek. In this a family of Duck-billed Platypus was observed recently, a tribute to *Billy's* smooth passage, since they appeared completely unaffected. Even if you are not lucky enough to sight these queer mammals you will not be too disappointed, as we now approach Tecoma, where those who intend visiting the Sherbrooke Forest, haunt of lyre birds, can leave the train and walk to the forest and the famous falls.

After a brief halt we continue to Belgrave, taking a horseshoe bend which gives us a full-length view of the train if we want a really fine camera study as a souvenir. Pulling into Belgrave we have a chance of a leg-stretch, as usually a few goods trucks are shunted off and this gives a glorious break for those who wish to have short rides on the engine or to lend a hand, knowing that the train-crew will reciprocate on the "one good turn deserves another" basis. The engine returns, the fireman or

Horseshoe Bridge, Selby, a long trestle structure.

driver pulls over the points lever and *Billy* is again hitched up to his precious cargo, consisting now only of humans, excitedly crowding back to the footboards as we pull away towards Selby. Soon we are crossing the long trestle bridge over both the creek and main road, with the cars lined up below, toy-like in size, as the occupants peer up at us. This is possibly the greatest thrill of our journey, especially for those who gaze down at the ground from the carriage-tops!



A frontal view of the engine as it leaves Belgrave.

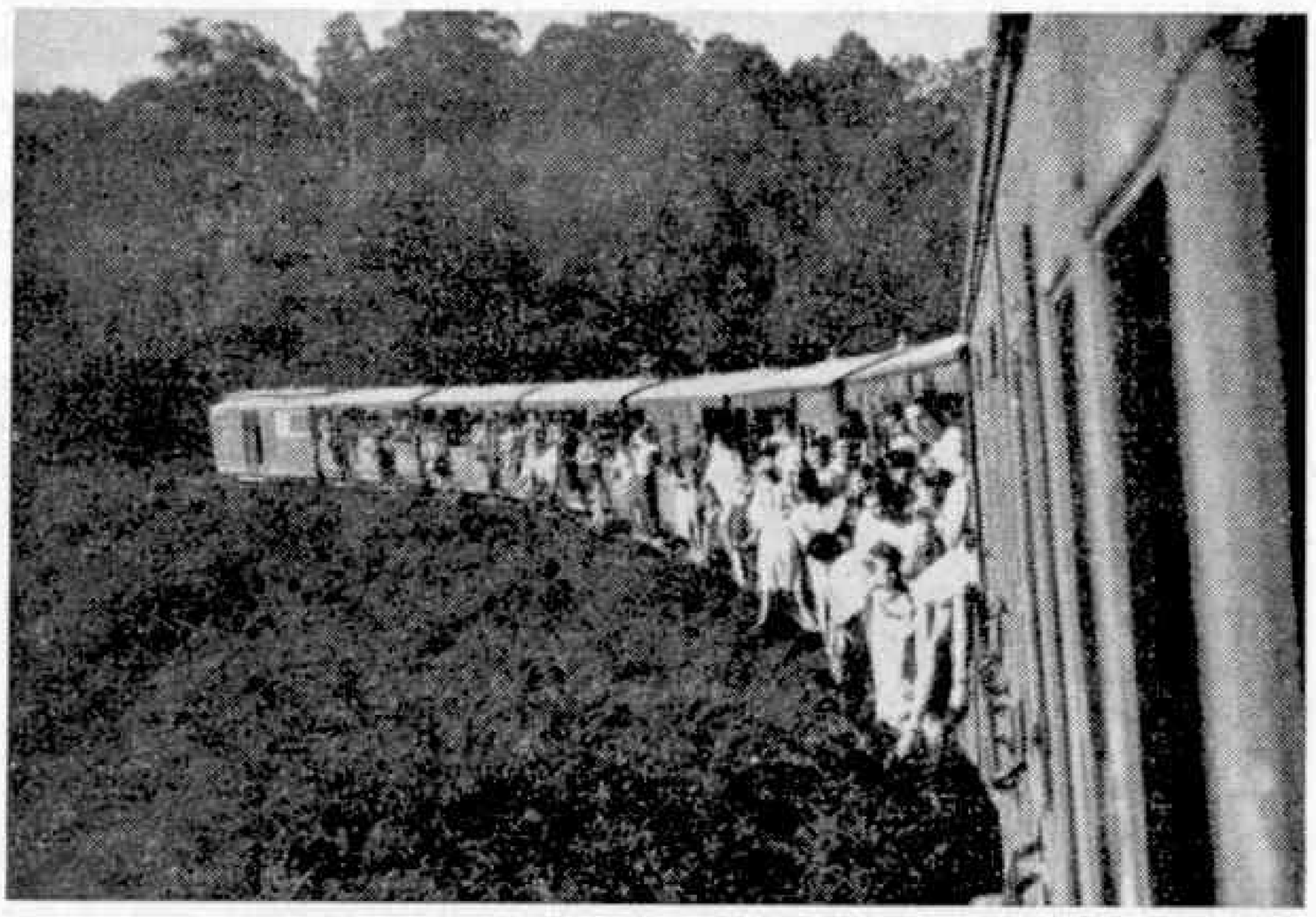
From Selby we climb gradually and our next stop is at Menzies Creek, famed for a gold discovery many years ago. We are now well over 1,000 feet above sea level and some of our family will leave the train to hike over the hills towards Kallista and Mount Dandenong, where the heights reach 2,077 ft. and from which a glorious view can be obtained stretching out as far as Port Philip Bay. One can imagine the aborigines watching as John Batman, who bought from them the site of Melbourne, made his famous landing in 1834. In those days the natives walked over the route of our little train to exchange their produce for fish caught by their brothers living by the shores of the bay.

Continuing our climb, we stop at Clematis and then the line bends towards Emerald, a popular picnic centre. We make a call at Nobelius, one of the "No-one-in-Charge" stations, where signs are provided for those who wish to board the train and exhibit the correct signal according to the instructions on the platform. A short run through delightful woodland brings us to Lakeside, where we have a wonderful view of the Emerald Lake, with its diving tower and other facilities for the day-tripper, and then with a light heart and a light load *Billy* faces the last leg of his trip with calls at Wright, Cockatoo and Fielder.

Here we should mention that some time ago *Billy* became a Good Samaritan when, following a bad road smash alongside the railway, the driver pulled up. While the guard rendered first-aid to the victims, the driver and his mate tapped the telephone line and called a doctor before resuming the journey. That must surely have been a novel experience for any train, anywhere in the world!

At about half-past twelve we draw into Gembrook and while we are off to lunch by some beauty spot and spend a few hours resting in the shade of some glorious trees, *Puffing Billy* is being fed and watered also, to freshen him up for the return trip leaving Gembrook at 4.0 p.m., getting us back into Ferntree Gully at 6.30 p.m.

You may wonder why the "downhill" run is not quicker but, after all, speed is second always to safety where *Billy* is concerned, and who would want to shorten such a trip anyway? As dusk is drawing in we see the hills in a new light, reaching the Gully to observe one of Victoria's awe-inspiring sunsets over Melbourne. Crowds of city workers, tired after their day's toil and homeward journey, pause to watch *Billy* pull into the station, from where, after leaving his satisfied passengers, he travels to the miniature sheds.



A happy holiday crowd, most of them apparently on the footboards, seen from the engine as the train rounds a curve.

I Took My Bike To Paris

By Bernard Llewellyn

I NEVER had cause to regret the day I took my bicycle to Victoria Station and put it on the train for Paris. Everything I wanted for ten days' holiday I had managed to squeeze into the saddlebag and the small canvas bag with the zip-fastener, which fitted snugly between the saddle and the carrier. I would be independent of jostling porters, crowded buses and the packed Paris "Metro"—free to travel at my own pace and in my own way. Nor did I expect to feel lonely, since a friend was going with me.

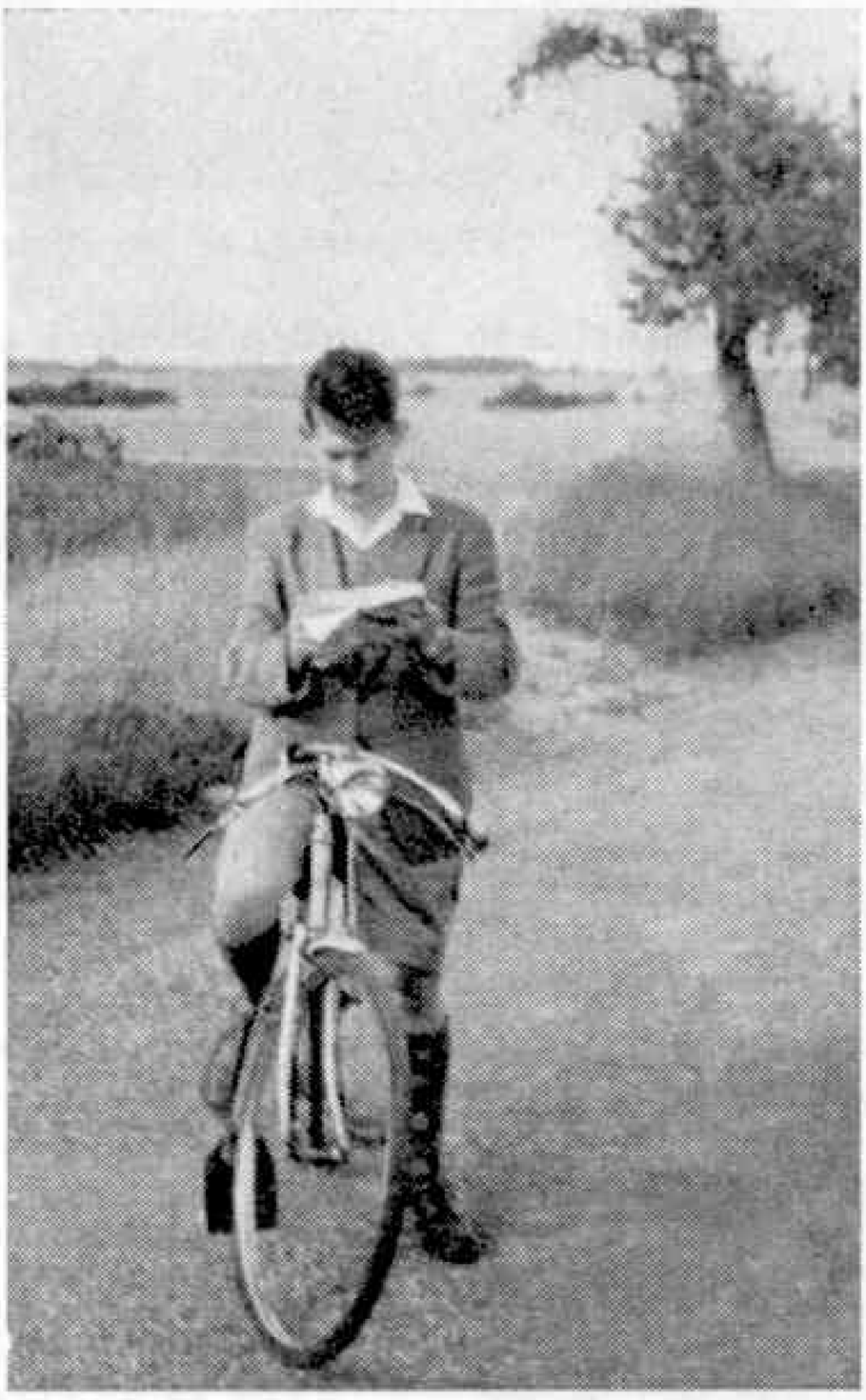
There was, I admit, a momentary anxiety when I saw my machine swung into the hold of the cross-Channel boat at Newhaven and out again in picturesque Dieppe. But I need not have worried. When the train pulled in at the Gare St.-Lazare and I went to claim my bicycle, it was in apple-pie order, and so was my friend's. Outside the station Paris awaited us.

We had arranged to spend two or three days at a cheap hotel south of the river, off the Boulevard Raspail. This was to be our headquarters while we explored the city. We examined our maps. The road from the station was clear enough. We simply had to cross the Place de la Concorde and head south. That was all.

It is easy enough to write; but at the time we were new to the Paris traffic, and should have started our road life by tackling something simpler than this great square, where the Revolutionists had once set up the busy guillotine.

We remembered to keep to the right. That was not the difficulty. It was the other traffic that seemed to spring from every conceivable direction towards us the moment we had left the shelter of the kerb to cross the square! From right and left vehicles tore past our front wheels. Cars shot from behind us like bullets, hooting and swerving. The great square which had witnessed the unhappy end of Marie Antoinette nearly saw our end too. By a miracle we survived.

Nor was it long before we began to take the Parisian traffic as much for granted as the cobbled streets and the police, with their whistles and white batons. Vicious braking by fast cars and near accidents to pedestrians ceased in time to make us look around, and we were able to cycle along and enjoy the atmosphere of the gay capital at the same time.



My companion stops to take his bearings, with the aid of a Michelin map. The illustrations to this article are from photographs by the author.

What variety there is in Paris! You pass from the jostling throngs on the boulevards and in the busy cafes to quiet bistros in deserted streets, the bookstalls along the banks of the lovely Seine, and little gardens in the shadow of the great University. You move in wonder from the fantastic tomb of Napoleon to the unforgettable Winged Victory of Samothrace in the Louvre; from the cool vaults of the Pantheon to the gargoyles on the roof of Notre-Dame. And before we left Paris, we wheeled our bicycles up the stone steps of Montmartre to the magnificent basilica of Sacre-Coeur and looked from its commanding height over the wonderful city.

Paris, like London, is inexhaustible. There is always something new to be discovered. And when we left on the fourth day of our holiday it was not because we had seen everything, but because we had planned to see more of the French countryside than the Bois de Boulogne.

We set off south west, past the Palais de Chaillot, where so many U.N. conferences have been held, along the road to Versailles.

In the famous chateau here, 12 miles outside Paris, the peace treaties were formally signed after World War I. The great Hall of Mirrors where the statesmen of the different countries had sat overlooked the spacious grounds. We were shown the royal apartments where Louis XIV had once lived, majestic still with their gilded furnishings, painted ceilings and hanging tapestries.

The pilgrimage of the choir boys at Chartres.

In Versailles we spent the night in the first hotel we came to. The proprietress was a friendly soul, and after we had checked her desire to put us both in the same bed, she took us to a nearby restaurant where we ate cheaply and well.

We hoped we would do as well at Chartres. The 43 miles between the two cities were heavy going. Much of the road was cobbled and uphill; and when the surface improved a head wind came at us over the hedgeless fields. As far as Rambouillet we followed the main road, but thereafter we took to secondary roads and laboured along them to where the unequal spires of Chartres Cathedral thrust 400 ft. into the sky.

The statue of Joan of Arc in the square at Orleans.

Chartres is an old city, partly built up the slope of a hill. There is an upper and a lower town, and at the top of the hill is the Cathedral, dominating everything in sight for miles around. There may be lovelier cathedrals than this; but for me Chartres is the most wonderful of them all. Its weatherbeaten grey walls look as if they have grown out of the soil of France.

The next day was one of pilgrimage. Choir boys had come from all around to sing in the cathedral in their coloured robes. It was a memorable experience to stand inside these ancient walls at the back of the nave listening to the boyish trebles and the deeper voices of the men, and regarding the rich blue splendours of the finest stained glass in the world.

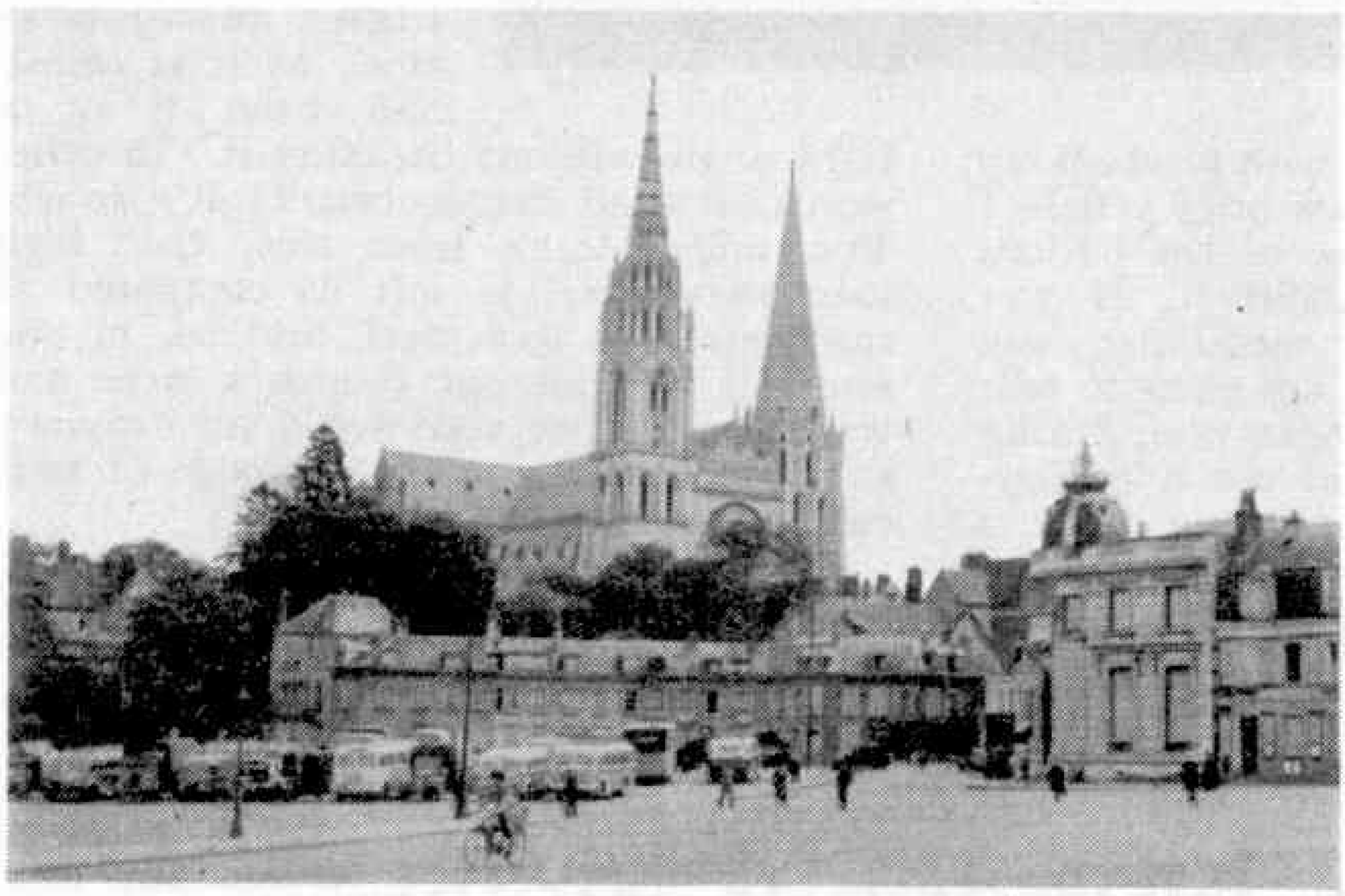
The next stage was through quiet lanes and villages to Chateaudun with its massive castle. White billowy clouds and blue sky overlooked a landscape of smiling fields where blue-clad farmers and lovely Percheron horses were hard at work. Haystacks made excellent sites for picnics on French bread, cheese and tomatoes, and village shops provided cheap cider to wash away our thirst.

Chateaudun marked the farthest limit of our trip. From here we turned eastward to Orleans along the main road bordering the invisible Loire.

It is on the main roads especially that one is thankful that the road signs are in a language which tourists from almost any country can readily understand. One-way streets, level crossings, the presence of school children, etc., are denoted by signs common to many countries. Indeed,

during a U.N. convention on road transport held at Geneva in 1949, a series of road signs was laid down for international adoption. Since then, most countries in Europe and elsewhere have marked their roads accordingly. But I need not tell readers of the *M.M.* about this, as most of them will be familiar with most of the signs used.

It was a short and rapid run to Orleans; but when we got to the city itself the inevitable cobbles slowed us down. We jogged in to the centre of the city, which still bore the punishing scars of war. There was scaffolding about the towers of the cathedral and glass was still missing from the windows.



The glories of old grey stone and exquisite blue glass that make up Chartres Cathedral.

After looking inside the sombre, damaged building, we crossed to the main square to photograph the fine equestrian statue of the Maid of Orleans. Over five centuries before, Joan of Arc had defeated the English besieging Orleans and had knelt at mass in the great cathedral. The warrior maid is remembered here just as she is at Rouen, where she was burnt in the market-place.

I thought of Joan while we ate delicious fried mackerel in a restaurant not far from the cathedral, before getting out our Michelin map to consider the best route back to Paris.

We planned to start out that same evening up the N 20 road through Cercottes, push on as far as we could before dark, and then look for a room with a couple of beds. This proved to be a busy road, and we had to travel in single file for a good deal of the way. But soon after 9 o'clock we reached Artenay.

The inn we chose stood at the end of the village at a corner where the main highway had to wriggle round the side wall of the inn. It was a dangerous site for a bedroom, and we were rocked to sleep by the thunderous vibration of the huge Diesel lorries — many with giant trailers — which tore through the night to and from Paris, narrowly missing each other at the corner under our bedroom window.

Yet we were still alive the next day, when we continued our journey to Paris along the country lanes, past fields high with corn, and slate grey villages and church steeples, past tall red poppies and dappled horses. It was an idyllic countryside.

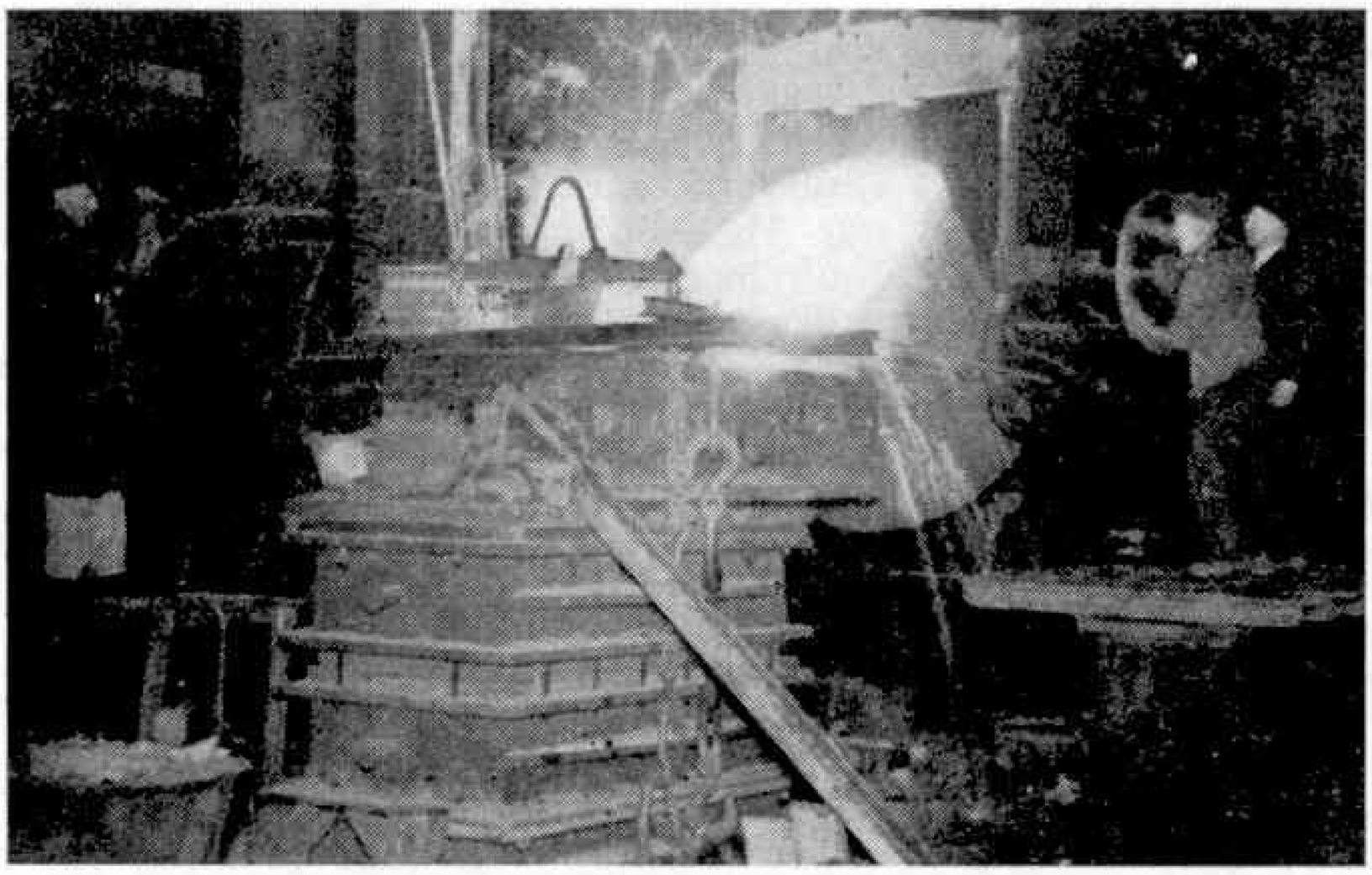
Almost before we knew it we were entering Paris, and celebrating our arrival with a cheap bottle of vin rouge in the Champs Elysees. It had been a good trip. And I told myself that one day I would do it all over again.

Rain to Order—(*Continued from page 70*)

of storm prevention over the vulnerable wheatlands. And not only would hail be prevented by such treatment, but also lightning, the potential for which is much reduced when the raindrops are small.

Much publicity has been given to the excitements that we shall soon be enjoying when the new era of space travel is established. But the era just dawning—the era of international weather modification and control—will certainly be very rich in its possibilities.

The stage has already been reached when the commercial meteorologists can upset the weather forecasts. Seedings, for example, in addition to increasing rainfall amounts, can increase the period over which the rain will fall, and it can be used again to maintain an area's cloud cover. This would be very unfortunate for the forecaster who was unaware of the operations — and predicted fine weather!



Casting in a dry sand mould to make a gas retort.

Steel— The Mysterious Metal

By Eric N. Simons

I HAVE been connected with steel all my working life, and in this brief article I propose to tell you a few of the curious and intriguing things about it. If you happen to be training for metallurgy, you may know most of what I am going to tell; but I'm writing for all those who, during the next week or so, will use a pocket-knife, a saw, a chisel, a plane, a razor, a tin can or, in short, anything made of steel, and who have not up to now had occasion to think about the material itself.

One of the things ordinary people do not often realise is that steel is a *crystalline* substance, made up of millions upon millions of tiny crystals. If you break a piece and look at one of the broken surfaces—assuming it is the kind of steel used for tools—you will see the individual grains, as they are sometimes called, even with the naked eye. You will see them still better if you employ a magnifying glass or a microscope. Men accustomed to dealing with steel can usually tell, by merely looking at these fractured surfaces, what percentage of carbon the steel contains, and a good many other interesting things about it. In fact, one of the commonest tests of a bar of tool steel is to nick the ends, break them off with a hammer, and examine the fractures.

I'm not going to bore you with technicalities. All I want to do is to give you a glimpse into some of the mysteries of steel, the unusual, unexpected things it does. For example, if you add from one to two per cent. of an alloying element called manganese to a steel, it becomes brittle. But suppose, instead, you add from twelve to fourteen per cent. of the same element. You can then take an unheated piece of this high manganese steel, as it is called, and bend it at a right angle without breaking it. In other words, it's no longer brittle; it's tough. You might think from this, that high manganese steel is soft as compared to razor steel or tool steel, and so, in one sense, it is. But put it into a lathe and try to cut it as you would an ordinary steel. In a few seconds, the edge of your cutting tool is blunted!

In fact, this high manganese steel, first invented by Sir Robert Hadfield in 1890 or thereabouts, can't be cut by normal methods. You have to use specially-shaped tools, made of a specially hard steel, and use a special technique, which isn't difficult, before you can machine it. The surface of the apparently soft steel actually *gets harder* the more you try to cut or abrade it. In other words, it hardens by virtue of being worked. Nobody knows why, though there are lots of theories.

Again, if you heat a piece of ordinary unalloyed cast steel in a furnace, and when it is glowing hot, plunge it into a tank of cold water, it hardens and becomes somewhat brittle. If, therefore, you want it ductile and tough rather than hard and brittle, you *don't* chill it in the water, but let it cool slowly, either in the furnace or in the air.

But let's see what happens with this same high manganese steel I've been talking about! If, when you take it out of the furnace, you plunge it glowing hot into cold water, it becomes ductile;

whereas if you let it cool slowly, it becomes brittle. It behaves, in short, the opposite way round to ordinary steel. Why? We don't really know. We can only guess.

Now here's another interesting thing about a different kind of steel—the steel of which many magnets are made. This is a steel containing large amounts of an alloying element called cobalt. If you put a batch of magnets made from this steel into a furnace and heat them to a certain temperature you will see them all at once began to glow brightly one by one in a remarkable manner. In fact, they become about forty degrees *hotter than the furnace* in which they've been placed. In some steel works this sudden lighting up is known as "moonshining."

But what's the explanation? Well, if we heat ordinary steels above a particular range of temperature, we change the way in which their molecules are arranged. Suppose we now let these steels cool to this same critical range of temperature. The molecules at once begin to go back to their original pattern of arrangement. In other words, they are suddenly set into violent motion. Such violent motion of molecules is always accompanied by a giving out of heat and a simultaneous expansion of the steel. You can easily see this effect if you watch for it in a darkened room.

But highly alloyed magnet steels behave differently from ordinary steels. They have to be cooled to the temperature of an ordinary room before these changes of molecular pattern begin, so you can't see them light up even in a darkened room. They aren't hot enough. In consequence, they've got to be *heated up again* to some extent in the furnace before the moonshining effect can be clearly seen. Then it's like a lot of lamps lighting up, one after the other. But why the difference from ordinary steels? There's the mystery!

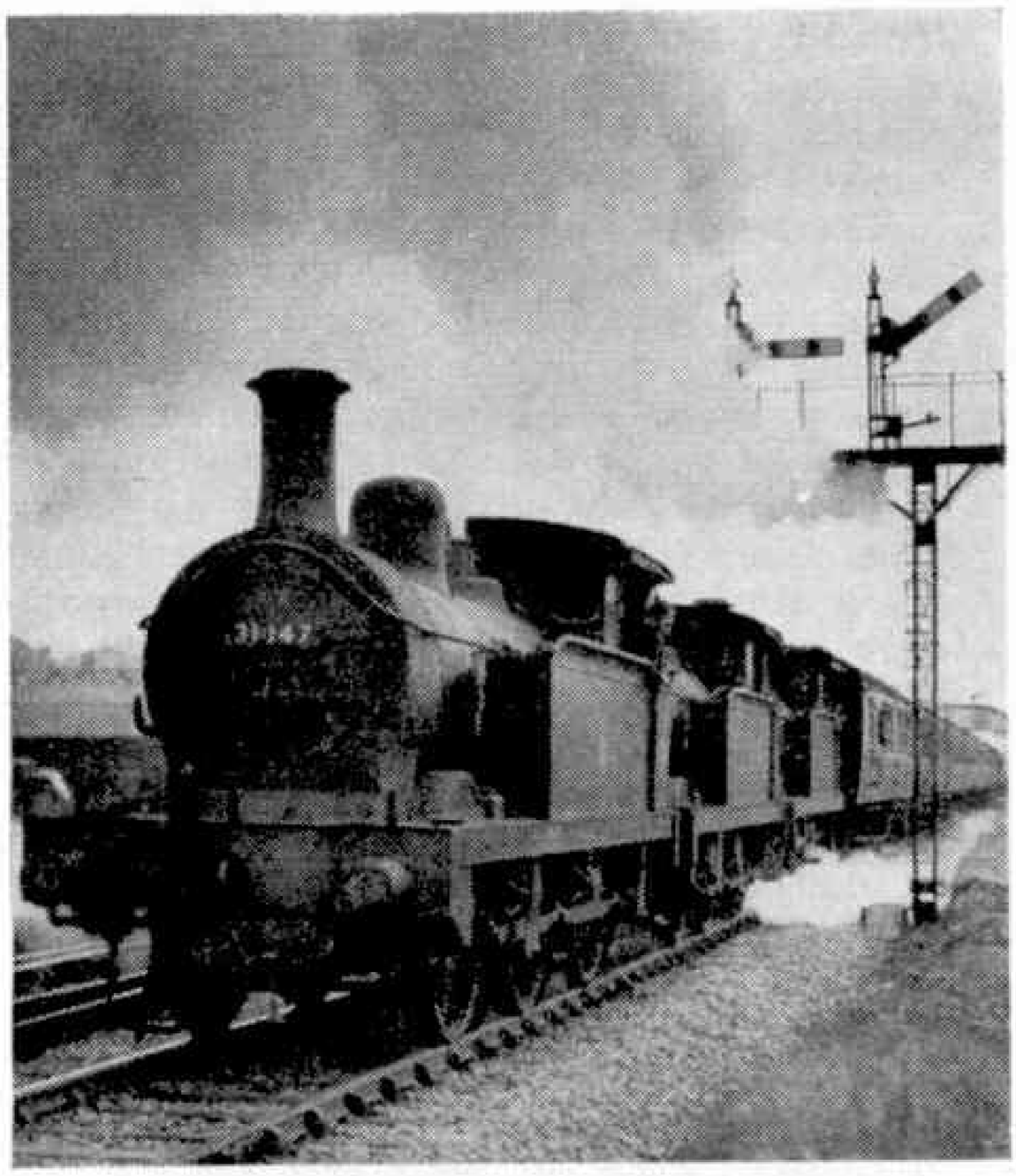
Do you know that steel ages? I don't mean that it grows a beard or turns white; but I do mean that for some reason we don't fully understand, a steel may suddenly and spontaneously change its properties after a certain lapse of time. This may happen either while it's standing in a cool warehouse, or when it's slightly heated, or after it's been hammered or worked in some way while in the cold state.

There are various effects produced. Sometimes the steel gets harder and stronger, but loses ductility and the ability to resist an impact shock. Sometimes its magnetic properties change. Sheets of carbon steel are specially liable to age, and very often the man who buys steel sheets lets them stay in his warehouse for a time after receiving them, to make sure that the ageing is over when he uses them. Sometimes, on the other hand, the sheet maker keeps them for a period after they are made before he sends them to the customer. Otherwise, there may be a considerable difference between the properties of the sheets as despatched or received and when used, especially if they have to travel a long way.

Nobody knows exactly why steel ages in this way, but the general opinion is that it arises from a disintegration of its structure, far too complicated and technical to be described here. The important thing is that today we can produce steels that *won't* age, and these are tougher.

Making steel by the Tropenas converter process. The converter is here seen being emptied of the liquid metal produced.

Lastly, I want you to picture a skyscraper in, say, New York. The steel framework of this is pressed upon by the enormous weight of the structure, such as floors and roofs. In other words, it is compressed. It transfers this force of compression to the rock on which it is built. The resistance (*Continued on page 55*)



A trio of Southern tanks, with the assistance of a fourth engine in the rear, bring a Folkestone-Victoria boat train up the 1 in 30 gradient from Folkestone Harbour to the Junction. Photograph by M. W. Earley.

Railway Notes

By R. A. H. Weight

London Midland News

What might almost be described as a "flying special" was run from Motherwell to Euston on 20th November, conveying important representatives of the Government, Services and Rolls-Royce Ltd., whose new factory had been opened at East Kilbride, Ayrshire, that day. It had been proposed that the party should return in late evening by air, but the offer of a particularly fast run with special dinner menu, made by the London Midland, was accepted.

The start was late, awaiting passengers, and further delay occurred down to Carlisle. From there, although the load was only six coaches, the 4–6–2 *City of Edinburgh* gave a magnificent run, reaching Euston, 299 miles, in about 294 min. or less than 5 hrs., including short stops at Crewe and Watford as well as several slowings for signals and permanent way repairs.

The uphill work was extremely fine and the speed at which the train was running at, say, Shap and Tring summits must have astonished the signalmen! No spectacularly high maxima were attempted downhill, as braking power was less than on a normally much longer train with many more wheels. The engine crew were Driver Geo. Pile and Fireman A. Wallis, accompanied by Inspector Fryer; the guard was E. Dumford, all of London. The special was at Carlisle at 6.0 p.m., in London by 10.55! On the previous night for the outward journey a heavy sleeping car special with buffet was run to Glasgow, worked by the same engine and crew to Carlisle.

New locomotives have been completed and allocated as follows: Class 5 4–6–0 mixed traffic, built at Derby: No. 73040–2, 6A, Chester; No. 73043–4, 10C, Patricroft; No. 73045, 20A, Leeds; and No. 73046, 15C, Leicester. Class 4 4–6–0, built at Swindon: Nos. 75046–9, 24A, Accrington. Class 2 2–6–2T: No. 84016–9, 26D, Bury, Lancs. Outside cylinder 0–4–0 saddle tanks constructed at Horwich: Nos. 47005–7, 6C, Birkenhead.

New 2–10–0s built at Crewe are numbered 92000–7 and upward. Midland type compound 4–4–0s have been noted at Euston and St. Pancras as assisting engines on double-headed expresses; other combinations have included pairs of various 4–6–0s.

Western Tidings

Class 4 4–6–0s have been built at Swindon, numbered 75020–4 and 75046–9, with others in hand of B.R. standard design. Diesel electric 0–6–0 shunting locomotives constructed at Derby numbered 13025–9 are allocated to 84E, Tyseley; 13030–3 to 81A, Old Oak. Nos. 13034–9 had been received but not allocated at the time of writing.

As anticipated, the last 2-cyl. 4–6–0 of her class, No. 2920 *Saint David*, has been withdrawn. Other engines condemned include several that belonged originally to separate Welsh companies, such as 0–6–2Ts No. 40, 75 and 77 ex-Rhymney Railway, and No. 431 that came from Brecon and Merthyr Railway, with 0–6–0Ts No. 194 and 682, formerly Taff Vale and Cardiff Railways respectively. No. 28, withdrawn, was at one time named *Cleobury* and belonged to a small concern near the borders of Worcestershire and Herefordshire called the Cleobury Mortimer and Ditton Priors Light Rly.

Some of the large 61xx 2–6–2Ts have been sent to depots a long way from the London district, such as Nos. 6102, 6107, 6114, to 86A, Newport (Ebbw Junction) shed and a batch to Tyseley. They still predominate on the local and outer suburban services based on Paddington, Reading, etc., and I noticed one running bunker first with express passenger headlamps on a semi-fast Maidenhead-Paddington train which we overtook west of Slough one afternoon. It was booked to run non-stop from the last named station to London. Among freight trains observed during a journey from Westbury to Bath were those hauled by locomotives of the 22xx 0–6–0, 43xx 2–6–0, and 72xx 2–8–2T types.

Typical of the very heavy Christmas passenger and parcels traffic on British Railways was the running of over 340 main line and long distance additional trains by the Western Region in five days.

Special non-stop express boat trains are run from Plymouth Docks to Paddington in connection with the arrival of vessels belonging to the *Compagnie Generale Transatlantique* and other lines, which often make very fast runs. I understand that one of the early engines of the class, No. 4089 *Donnington Castle*, with six coaches and saloons covered the 226 miles in less than 3¾ hrs., with the remarkable time of only about 2½ hrs. over considerable gradients along the 173½ miles from Exeter to London. One of the newest batch, No. 7031 *Cromwell's Castle*, has been the engine concerned in other excellent runs, while even more striking was the performance of No. 5973 *Rolleston Hall*, having driving wheels only 6 ft. in diameter, which is reported to have come up in less than 4 hrs. on that long run at a time when there were several slowings in force on account of track repair work.

165 Miles in Express Slip Carriages

I can remember the days before the first world war when 70 slip carriage services were being operated daily by the G.W.R. At that time there were another 100 or so spread over Britain on various lines, including the old L.B.S.C., which was one of the first to introduce the idea as long ago as 1858, the Midland, London and North Western, Great Eastern and Caledonian Railways. To-day, after complete suspension during the recent great war, the W.R. alone provides this facility to the extent of 10 slips each working day. Two are detached near Westbury (Wilts.) and one each at Bicester and Princes Risborough, off down expresses from Paddington; the other six are slipped from up fast trains, two at Didcot four at Reading.

An unusual railway view caught by the camera of R. E. Vincent. On the left a stopping train bound for Liverpool Street is descending Bethnal Green bank, while on the right is a variety of wagons and vans, many of the latter having the peaked roofs that characterise vans for through Continental services by train ferry.

Recently, when travelling 94½ miles and then 71 miles within 5 hrs. and without intermediate halt in slip carriages attached to express trains making long non-stop runs, I felt that I was doing something rather unique in the world.

The first run was in a very comfortable, modern, composite coach forming the last vehicle of the 10.30 a.m. *Cornish Riviera*, the fastest express to Plymouth, the first stop, and south Cornwall, from Paddington. This train at one time carried three slip portions for detachment at different points, as well as through carriages to various Cornish destinations. Now in winter it is composed of seven coaches including dining and kitchen cars for Penzance, two for Plymouth, plus the slip carriage destined for Weymouth, giving a tare weight of 336 tons or about 355 tons gross. We left London behind one of the reboilered and smartly turned-out largest 4–6–0s No. 6029 *King Edward VIII*, of Laira shed with Old Oak crew, and carrying *Cornish Riviera* headboard and train number 130.

The last vehicle of the main train up to the first regular stop, before and after slipping takes place, carries a double tail lamp with white rims showing two vertical red lights. The slip coach or last vehicle being slipped carries horizontal double tail lamp, red and white. A specially trained guard riding in an enclosed compartment at the end nearest the main train severs the specially fitted coupling, brake and heating connections at the appropriate moment, according to speed and location, having made sure that the signals are clear and that the rest of the train is running through normally and getting ahead.

It was a very misty day, but after taking things fairly easily out to Reading, the running over the more undulating Newbury route was lively indeed. The 45½ miles between Theale and Lavington were covered in 41¼ min., with a minimum speed of 53 m.p.h. on the steepest part of the climb to Savernake, followed by a maximum of 80 on the 1 in 222 descent beyond Patney. Just before 12.7 p.m., when about 94.4 miles from London, as the express was slowing slightly to take the avoiding line by-passing Westbury station and so to secure an easier, less curved course, a tug at the brake indicated that we were being detached, and with more gentle brake applications we came to a stand at Heywood Road Signal Box, 94.6 miles in 97¾ min. being about 1 min. early. The guard would have exchanged hand signals with the guard and fireman of the *Riviera* to indicate that slipping had been effected successfully.

It seemed odd to be marooned out in the country in a lone vehicle, but pannier tank No. 5419, was soon there to haul us into Westbury station, nearly a mile away. The carriage was to go forward to Weymouth behind a Hall at 12.45, attached to a stopping train from Chippenham.

A 2–6–2T, No. 5182, took me in a local to Bath, where I joined the slip carriage in rear of the 1.50 Bristol-Paddington express calling only at Bath. This was a nice ex-G.W.R. double-ended composite slip coach, weighing 36 tons and provided with internal corridor like the previous one, steam heating and hot washing water. *Sir James Milne*, No. 7001 of the Castle class, had 10 coaches in all, or say 335 tons. Running was fairly gentle along the first 29 miles to Swindon, which includes two short climbs. Then, after averaging over 60 m.p.h. in foggy conditions to Reading West Junction, the train slowed to take the crossing on to the platform loop line. We were detached and followed closely in to a gentle stop not far behind.

I immediately went to the up relief line platform, where two minutes later *King William III* ran in on an 11-coach West of England express. Very soon I was taking tea in the restaurant car and we were bowling along the main track not far behind the 1.50 Bristol at 62–64 m.p.h. We ran in to Paddington No. 9 platform at 4.16½, well before time—this train had been 7 min. late passing Castle Cary—and there on No. 8 stood *Sir James Milne* and her train, which had left me behind at Reading.

* * * *

The first six-axle electric locomotive for the Manchester-Sheffield electrification recently started trials between Dukinfield and Crowden.

A Castle in the Cotswolds. An up Western Region train headed by No. 7003 Elmley Castle in an attractive photograph by N. Ewart Mitchell.

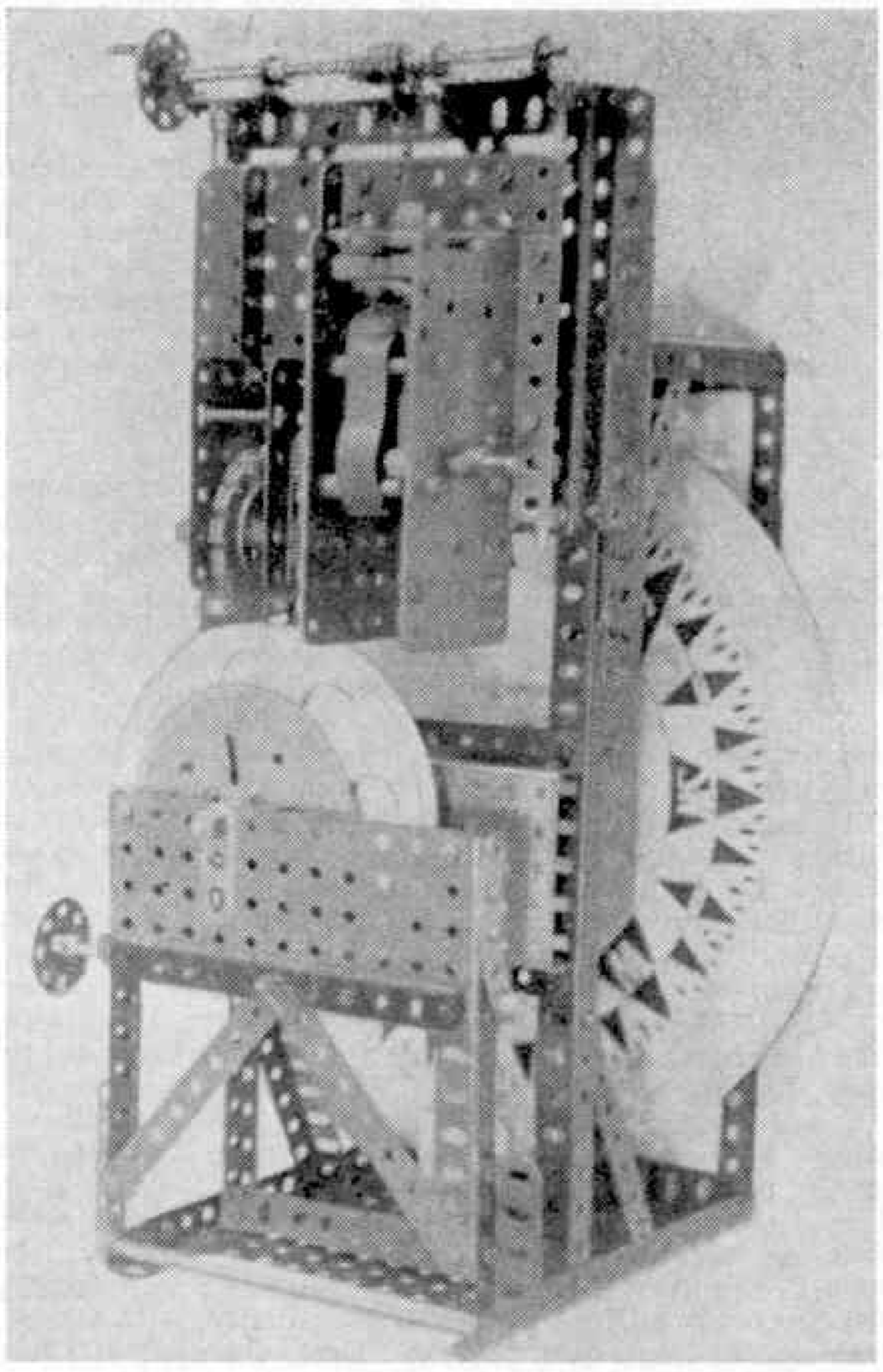


Fig. 1. The gear-cutting machine designed and built in Meccano by John Nowlan, Dagenham.

A GEAR-CUTTING MACHINE BUILT IN MECCANO

The illustration above shows a novel gear-cutting machine built in Meccano by John Nowlan, Dagenham. He designed the machine in order to be able to cut a special gear-wheel that he required for use in an astronomical clock, and apart from the actual cutting tool it is made from standard Meccano parts.

One of the problems he had to overcome in designing the machine was the method of dividing or setting the gear blank so as to produce the correct number of teeth.

The usual method of making use of a dividing plate with rows of concentric holes meant accurately making several such plates to cover the ranges Nowlan had in mind, namely 45 to 257 teeth, so he adopted a simpler idea. He purchased a nautical compass fly-sheet which has degrees marked around its edge and glued this to a steel circular plate which was then mounted on the same rod as the gear blank. To facilitate accurate setting he made a vernier and with this he can set directly to 1/10 degree and estimate to 1/100 degree.

A Screwed Rod in a crank at the top served as a clamp for small gears, and for large ones, he bolted a 133-teeth Gear to the blank and drove this with a Worm Wheel.

The Motor and cutter are mounted on a frame, which can be moved to and fro by rotating a Screwed Rod in a Threaded Boss secured under the frame.

Among the Model-Builders

By "Spanner"

The Screwed Rod carries a ½" Pinion driven by a Worm to give a fine feed to the cutter.

A CAM-OPERATED AUTOMATIC REVERSING MECHANISM

Recently I received a most interesting letter from G. Goddick, a Danish Meccano enthusiast from Vadbaek, who was on holiday in England when he wrote to me. Mr. Goddick is a very keen model-builder, and with his letter he sent details of several mechanisms he has found useful in many of his models. One of these was a reversing mechanism operated by a special cam that Mr. Goddick suggests would make a useful addition to the range of Meccano parts. Several other readers have made similar suggestions, but as shown in Figs. 2 and 3 it is possible to make a suitable cam with parts already available. The built-up cam is shown fitted to an automatic reversing mechanism on the lines of that put forward by Mr. Goddick, but it should have many other uses in Meccano mechanisms.

The automatic reversing mechanism is assembled on a 5½" × 2½" Flanged Plate. The driving shaft is supported in the Flanged Plate and in a Double Bent Strip bolted to it, and the shaft carries a 1½" Contrate 1, a Worm 2 and a Bush Wheel 3 fitted with a Threaded Pin as a handle. The driven shaft is a 5" Rod 4 mounted in two Trunnions bolted to the Flanged Plate. The Rod 4 is fitted with two ¾" Pinions 5, a Collar 6 and a Compression Spring 7. The Compression Spring is spaced from one of the Pinions 5 by ten Washers.

The Rod carrying the cam 8 is mounted in the Flanged Plate and in a Double Bent Strip. A ½" Pinion on the Rod is driven by a Worm 14, and a ½" Pinion on the same Rod as the Worm engages the Worm 2. The Rod is supported as shown in 1½" Flat Girders bolted to the ends of the Flanged Plate. The cam 8 consists of a Face Plate fitted with eight ¾" Bolts. Three of these, indicated at 9,

Young Miss Arnold, daughter of Mr. H. Arnold, Dublin, playing happily with her Dinky Builder Outfit.

are fixed in the outer holes of the Face Plate. The Bolts 10 are positioned centrally in two of the slotted holes and the three Bolts 11 are arranged in the inner holes of the Face Plate.

The cam is connected to the Rod 4 by a lever 12, made from a 2" Slotted Strip bolted to a Crank that pivots on a 1½" Rod held in a Double Arm Crank. The lever is connected to the Rod 4 by a Collar spaced from the Collar 6 by three Washers. A Bolt 13 is passed through the Crank and the Slotted Strip and is fitted with a nut and then screwed into the Collar. The nut is tightened against the Collar, but the Bolt 13 must not grip the Rod 4.

The mechanism is set so that when the lever 12 bears against one of the Bolts 10 the ¾" Pinions 5 are equally spaced inside the Contrate just clear of its teeth. This gives the neutral position of the mechanism. As the cam turns the Bolts 9 move the lever 12 and the Rod 4 to the right, Fig. 3, and bring one of the Pinions into mesh with the Contrate. As the movement of the cam continues the Compression Spring returns the Rod 4 to the left until when the lever 12 bears against the Bolts 11 the other Pinion engages the Contrate to reverse the direction of the drive.

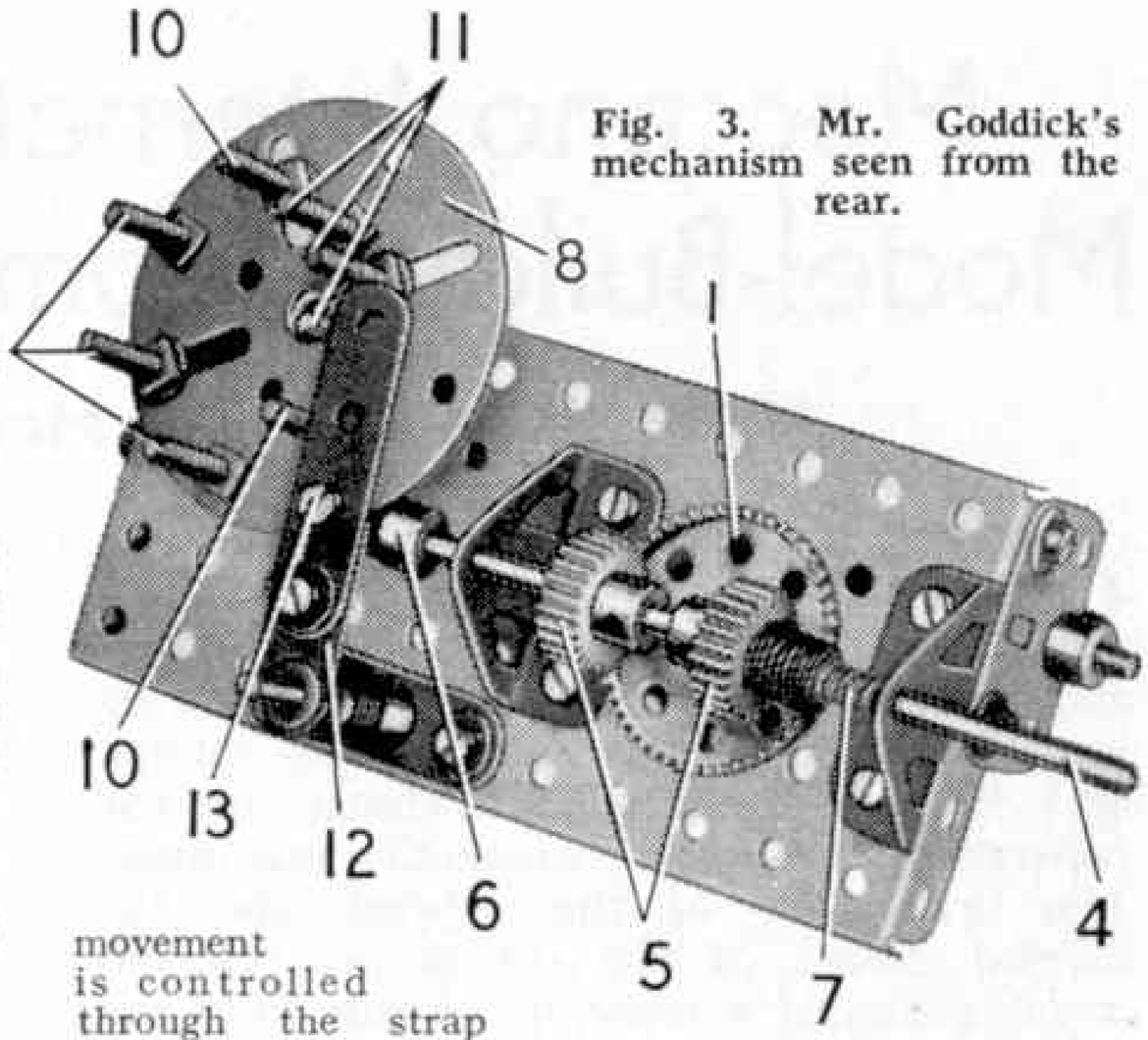


Fig. 3. Mr. Goddick's mechanism seen from the rear.

A DIFFERENTIAL CRANE WINDING DRUM

It is not always convenient to provide a forward and reverse drive to each winding drum of a model crane, to enable both the hoisting and lowering movements to be power-operated. The usual system is to disengage the drive from the Motor, while the load is lowered under the control of a brake. Mr. N. Gottlob, Hjortekaer, Denmark, has designed an interesting variation of this arrangement, incorporating a simple differential fitted inside the winding drum. It is shown in diagrammatic form in Fig. 4. One of the differential half-shafts is connected to the Motor, and the other is fitted with a strap brake. When the Motor is set working, with the brake applied, the drum is driven at half the speed of its driving shaft. This built-in reduction ratio results in a saving in the number of gears needed between the Motor and the drum. When the Motor is stopped and the brake is released, the drum turns freely under the weight of the load, and the lowering movement is controlled through the strap brake. The brake shaft turns at twice the speed of the drum.

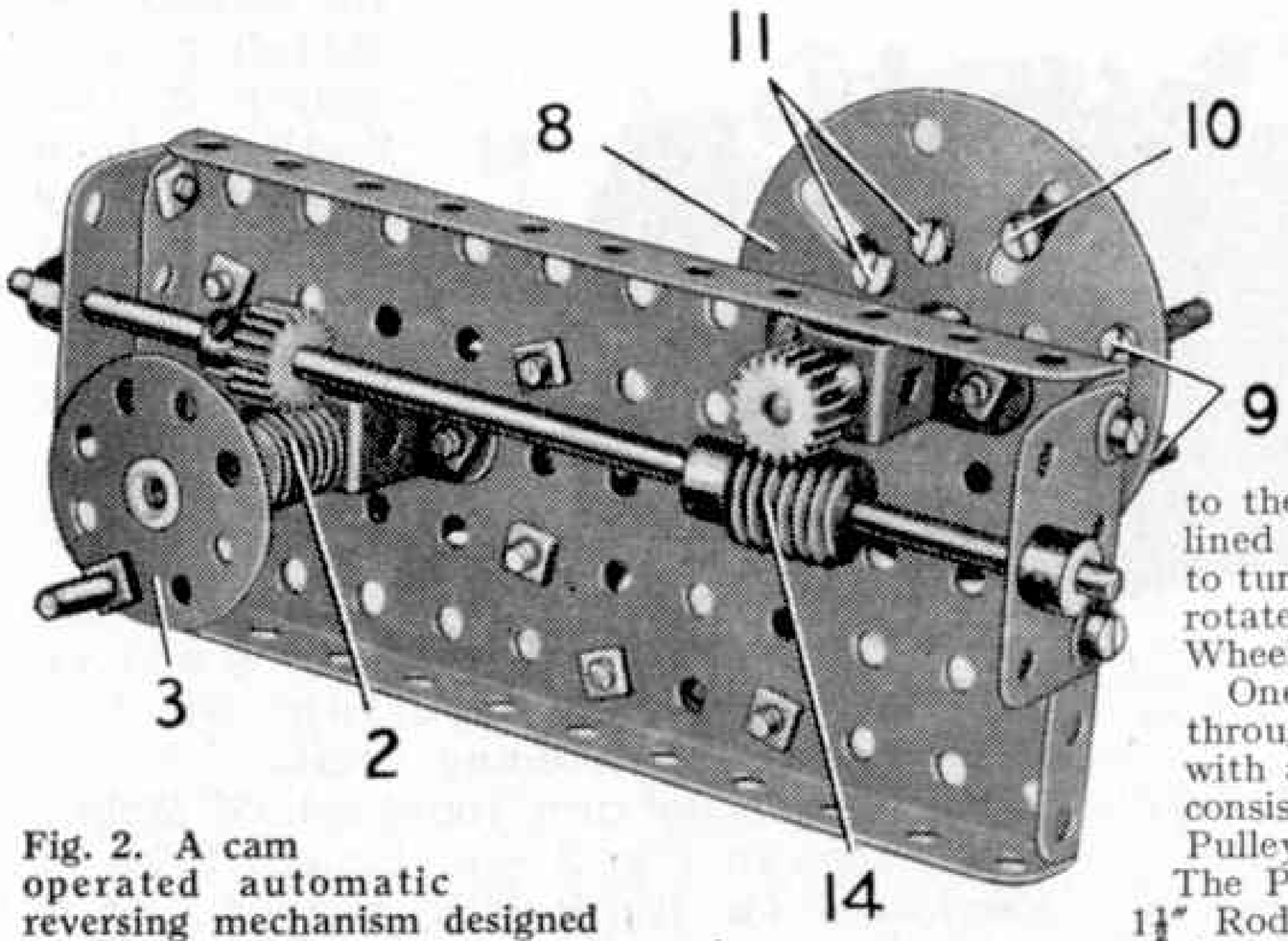


Fig. 2. A cam operated automatic reversing mechanism designed by Mr. G. Goddick, Vadbaek, Denmark.

The drum is a Cylinder 10 fitted at its centre with a Rod 2. The Rod is held in place by two Collars 8, and a ½" Pinion 5 is freely mounted on the Rod but is spaced from the Cylinder by two Washers. The half-shafts are 2½" Rods, each fitted with a ¾" Contrate 6 and a Collar. A 1⅛" Flanged Wheel 3 is pressed into each end of the Cylinder, and the positions of the Collars on the half-shafts are adjusted so that the Contrates 6 engage the Pinion 5.

The bosses of the Flanged Wheels 3 are free to turn in Socket Couplings 9, which are fixed to Bush Wheels 4 bolted to the mechanism framework. The parts must be lined up very carefully so that the drum is free to turn in the Socket Couplings, and the half-shafts rotate freely in the Bush Wheels and the Flanged Wheels.

One of the half-shafts is connected to the Motor through suitable gearing and the other is fitted with a Pulley to form the brake drum. The brake consists simply of a belt of Cord passed round the Pulley and connected to a lever.

The Pinion 5 and the Collars 8 are mounted on a 1½" Rod, and Mr. Gottlob suggests that it may be preferable to shorten the Rod slightly so that its ends flush with the walls of the Cylinder. This will ensure that the Cord winds evenly on the drum, but it is not really essential, as the Rod 2 does not rotate, and if the Cord winds over the end of the Rod it will not affect the working of the mechanism.

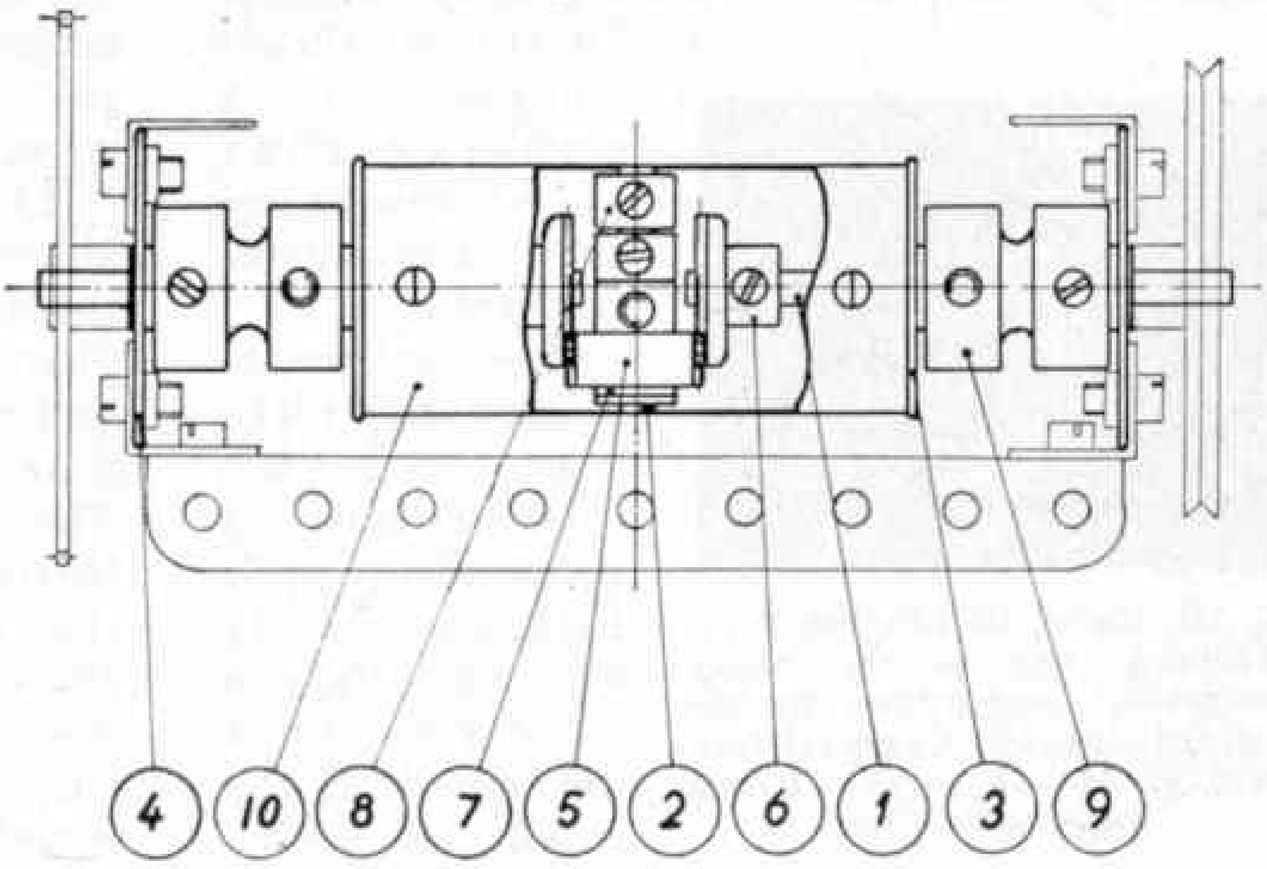


Fig. 4. A novel differential winding drum for cranes. It was designed by Mr. N. Gottlob, Hjortekaer, Denmark.

Meccano International Model-Building Competition

More Prize-winning Models

M. J. Waring, Lancaster, winner of a prize in Section B of the International Model-Building Competition.

AMONG the most unusual entries in this Competition was a calculating machine built by M. J. Waring, Lancaster, who was awarded a prize of £5 in Section B. Waring was 13 years old when he built his model, and had no detailed knowledge of the construction of actual calculating machines. The originality of the subject and the careful design of the rather complicated mechanisms of a machine of this kind are praiseworthy, and the whole model is a remarkable achievement for a boy of Waring's age.

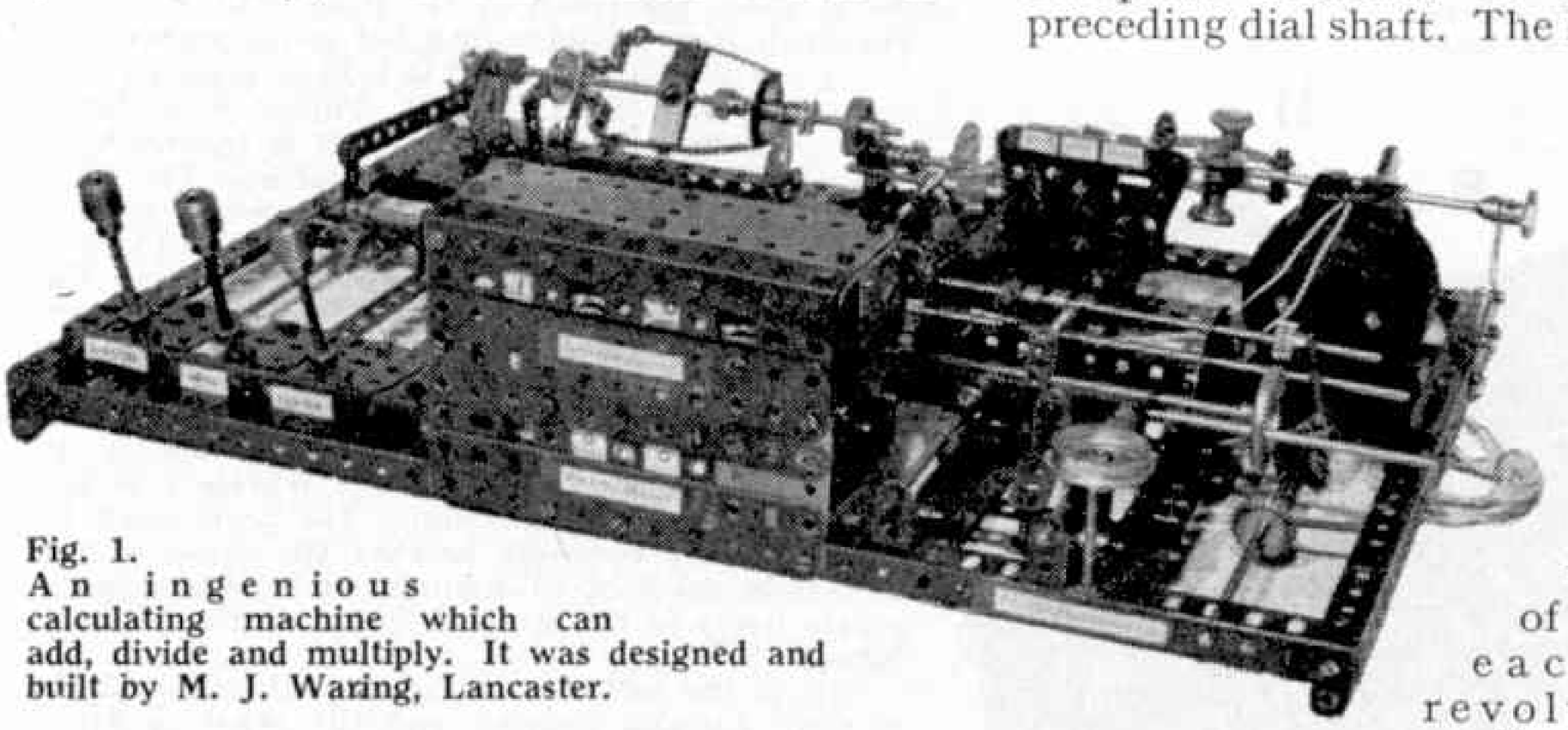
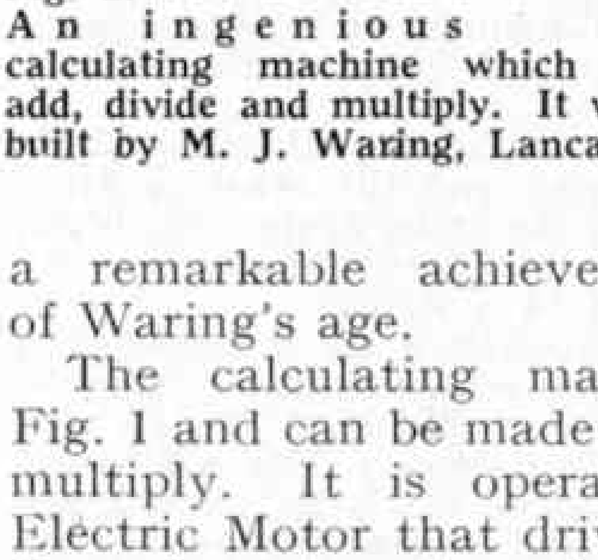


Fig. 1. An ingenious calculating machine which can add, divide and multiply. It was designed and built by M. J. Waring, Lancaster.

The calculating machine is seen in Fig. 1 and can be made to add, divide and multiply. It is operated by an E020 Electric Motor that drives the mechanism through an ingenious clutch unit. The final readings are taken from dials viewed through small windows in a housing that accommodates the revolution counters.

The arrangement of this part of the mechanism is interesting, as it follows closely the revolution indicator described in the August 1952 *M.M.* The mechanism makes use of a Ratchet Wheel fixed to each of the short Rods that carry the dials. Each Ratchet is operated by a Fishplate attached to a Collar on the preceding dial shaft. The Fishplate engages the teeth of the Ratchet, and moves it two teeth for each complete revolution of the Collar and Fishplate. As the Ratchet has 20 teeth, it rotates through 1/10th of a revolution for each complete revolution of the preceding shaft.



G. W. Kelly, Wellington, New Zealand, one of the many successful competitors in the International Competition. Kelly is an apprentice locomotive fitter.

The fine model of a Jones KL 66 Mobile Crane seen in Fig. 2 won Fourth Prize in Section C for Keith Hill, Newark. It is not a large model, but good planning and careful design enabled its builder to include all the essential movements of the real crane within the limited space available in the model. The control levers are arranged neatly alongside the operator's seat, and can be reached conveniently by opening the door of the cab.

The model is operated by an Electric Motor housed in the cab. The Motor drives through a friction clutch and a compact gear-box, the winches for luffing the jib and raising and lowering the load, and the four-wheel drive to the travelling wheels. The drive to the wheels is transmitted through a shaft that passes freely through the centre of the bearing that supports the cab. The lower end of this shaft carries a ½" Bevel that drives a 1½" Bevel forming the crown wheel of a differential unit fitted across the centre of the wheeled base.

Each half-shaft of the differential is fitted with two small Sprockets, each of which is connected by Chain to a Sprocket on the axle of one of the wheels.

The driving wheels of one axle are steerable, and the drive to them is taken through a neat universal joint fitted to each wheel. This joint consists of a Handrail Coupling fitted inside one end of a Socket Coupling. The grub-screw in the Handrail Coupling engages the slot of the Socket Coupling, so that although the two parts pivot freely in relation to each other they rotate as a unit.

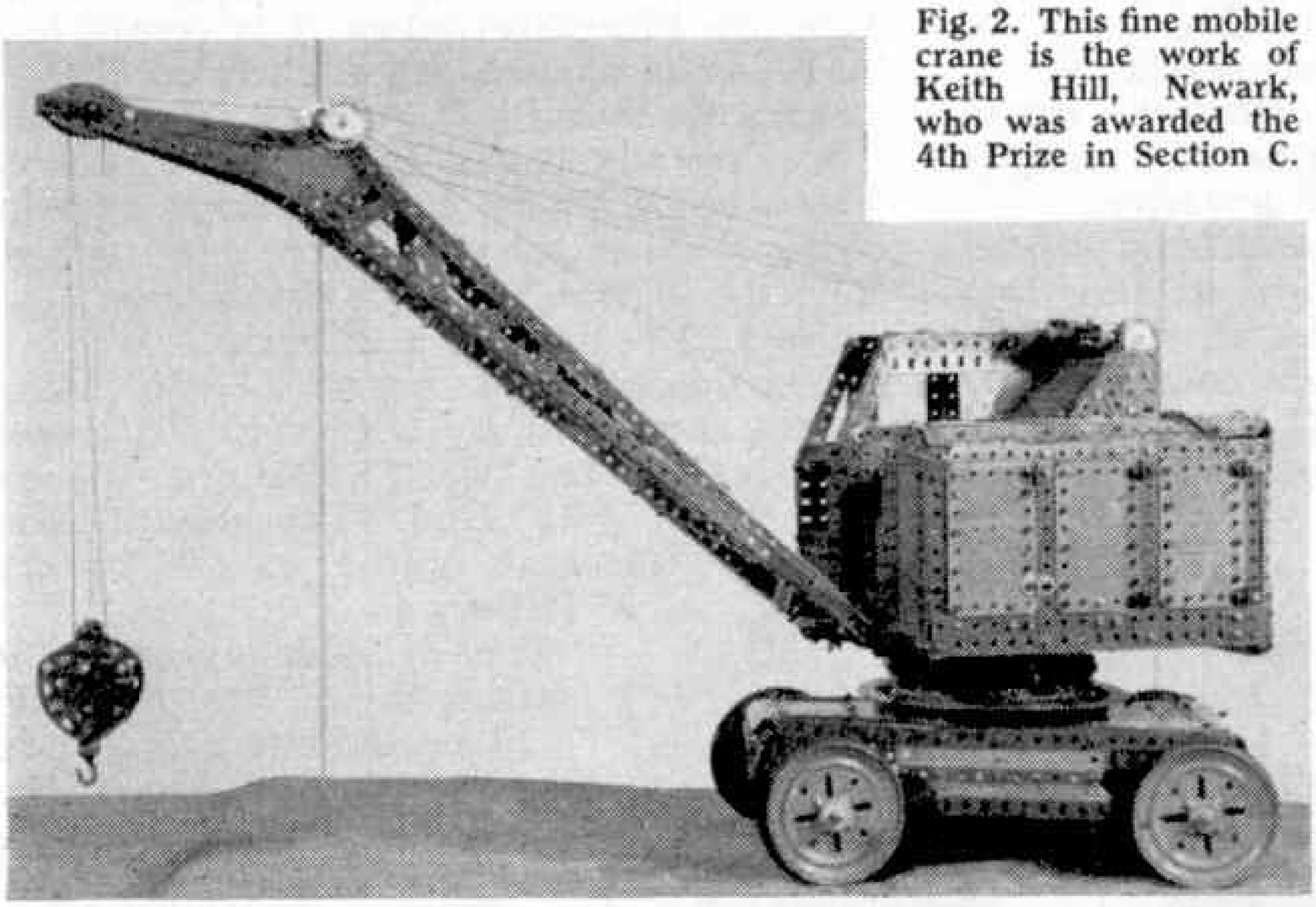


Fig. 2. This fine mobile crane is the work of Keith Hill, Newark, who was awarded the 4th Prize in Section C.

Another very attractive model is an ore handling crane built by James Touryan, Beirut, Lebanon. This model is shown at the foot of this page and it is designed for unloading ore from barges or for working in open copper and sulphur mines. The crane has a clam-shell bucket of large capacity, which can be discharged into a hopper that in turn distributes the material into wagons passing under the gantry. The various movements are carried out by neatly arranged mechanisms and the entire model has a neat and strongly constructed appearance well in keeping with the heavy work that it has to undertake.

Another most unusual type of model was that sent by G. W. Kelly, who is an apprentice locomotive fitter and lives at Wellington, New Zealand. Kelly won one of the principal prizes in Section C with a piano player of very ingenious design. The complete unit is built to fit neatly inside the casing of a piano, and in order to reduce the noise of the driving motors it is enclosed in sound proof boxes packed with cotton wool. The mechanism can play as many as 26 different keys simultaneously, and actually has been adjusted to play the well-known Maori song tune "Now is the Hour." The mechanism also operates the loud and soft tone pedals. When the player is in action with the lid of the piano closed it is most mystifying to see the keys moving up and down, apparently played by ghost hands!

I think readers will agree that it would be hard to find a more attractive and unusual subject for a model and I would like to congratulate Kelly on his very original choice and the manner in which he carried his ideas into effect.

There are still many models among those that won the smaller prizes in the International Competition, that I have not yet been able to mention in these write-ups. I hope to include some of them however, in future issues from time to time.

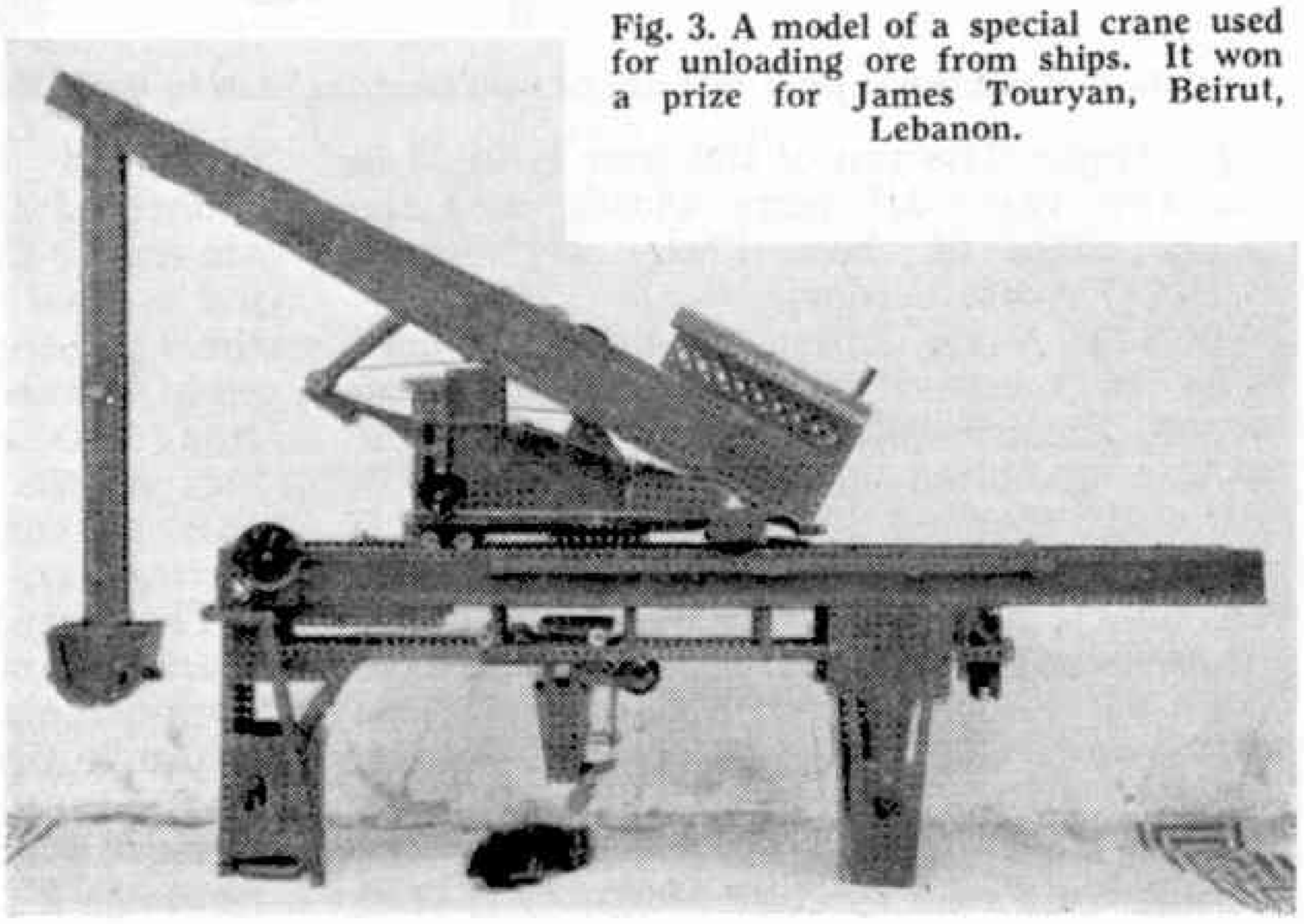


Fig. 3. A model of a special crane used for unloading ore from ships. It won a prize for James Touryan, Beirut, Lebanon.

New Meccano Model

Steam Engine and Boiler

THE steam engine and boiler shown in Fig. 1 is designed so that it can be built from the parts in an Outfit No. 7. The model represents a complete steam power plant and the engine has realistic valve gear and a dummy governor.

Each side of the base of the model consists of three 12½″ Strips and two 12½″ Angle Girders bolted at their ends to 2½″ Strips. The sides are connected by Angle Brackets to 5½″ × 2½″ Flexible Plates strengthened along their edges by 2½″ and 5½″ Strips. The top of the base is filled in by two 12½″ × 2½″ Strip Plates, and the inner edges of these Plates are braced by 12½″ Angle Girders.

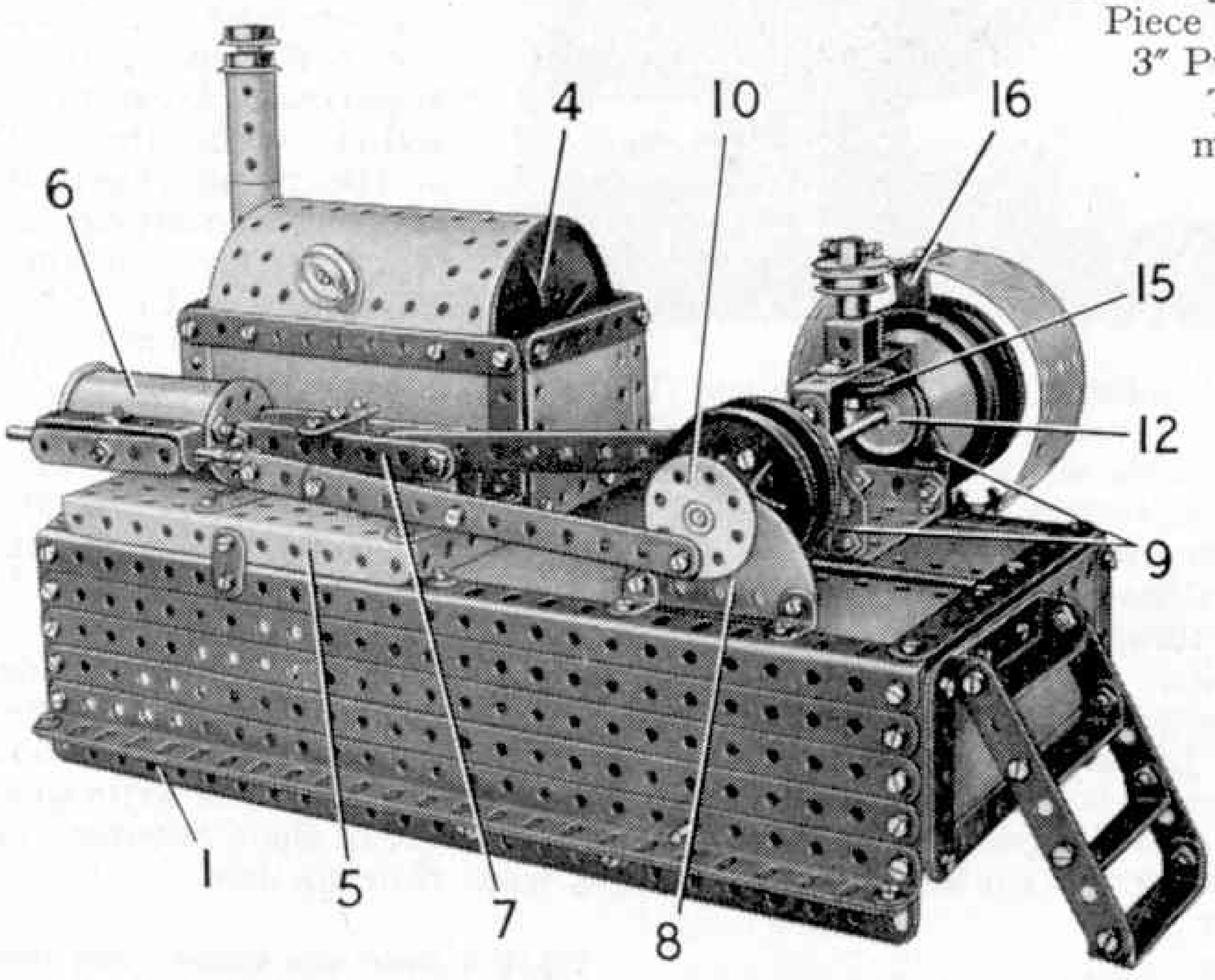


Fig. 1. A steam power plant that can be built from the parts in Outfit No. 7.

A 12½″ Angle Girder 1 is bolted to each side to increase its depth so that an E20R Electric Motor can be fitted. The Motor is bolted inside the flanges of a 5½″ × 2½″ Flanged Plate, and the Plate is fixed in position between the Girders 1 as shown in Fig. 3. A Worm 2 on the Motor shaft meshes with a ½″ Pinion fixed on a 6½″ Rod mounted in the sides of the base and held in position by Collars. A ½″ Pulley 3 is positioned as shown on the Rod.

The boiler and cylinder assembly is built as a separate unit and is attached to the base by Fishplates when it is completed. A Boiler is opened out slightly so that it fits tightly round a 3″ Pulley 4 at each end. The Boiler is bolted to 5½″ × 2½″ Flexible Plates edged by 5½″ and 2½″ Strips, and the sides are attached at each end to two 2½″ × 2½″ Flexible Plates overlapped four holes and braced by a 3″ Strip.

The smoke stack consists of two Sleeve Pieces connected by a Chimney Adaptor and capped by two ¾″ Flanged Wheels on a 3½″ Rod. The lower Sleeve Piece is bolted to one of the 3″ Pulleys 4.

The cylinder assembly is mounted on a 5½″ × 2½″ Flanged Plate 5 bolted to the side of the boiler unit. A Cylinder 6 is fixed to the Flanged Plate, and Wheel Discs are clamped to its ends by 3″ Screwed Rods fitted with nuts. Before the Wheel Discs are placed in position the valve chest is fitted, and this consists of a 2½″ × ½″ Double Angle Strip and a 2½″ Strip fixed to a Double Bracket bolted to the Cylinder.

The slide bars are two 3½″ Strips 7, each of which is supported by two 1″ × 1″ Angle Brackets bolted to the Flanged Plate 5. The crosshead consists of two 1½″ Strips connected by two Double Brackets that are free to slide on the Strips 7. The piston rod is fixed in a Collar connected to one of the 1½″ Strips by a bolt, and a Rod and Strip Connector is fitted to the end of the Rod. The valve rod is free to slide in the lugs of the Double Angle Strip forming part of the valve chest, and this Rod carries also a Rod and Strip Connector.

The crankshaft is mounted in three bearings, one of which consists of a Semi-Circular Plate 8 attached to the base by Angle Brackets. The other bearings are Flat Trunnions 9 bolted to a 2½″ × 1½″ Flanged Plate fixed to the base. The crank webs are 2″ Pulleys. One of these is fixed

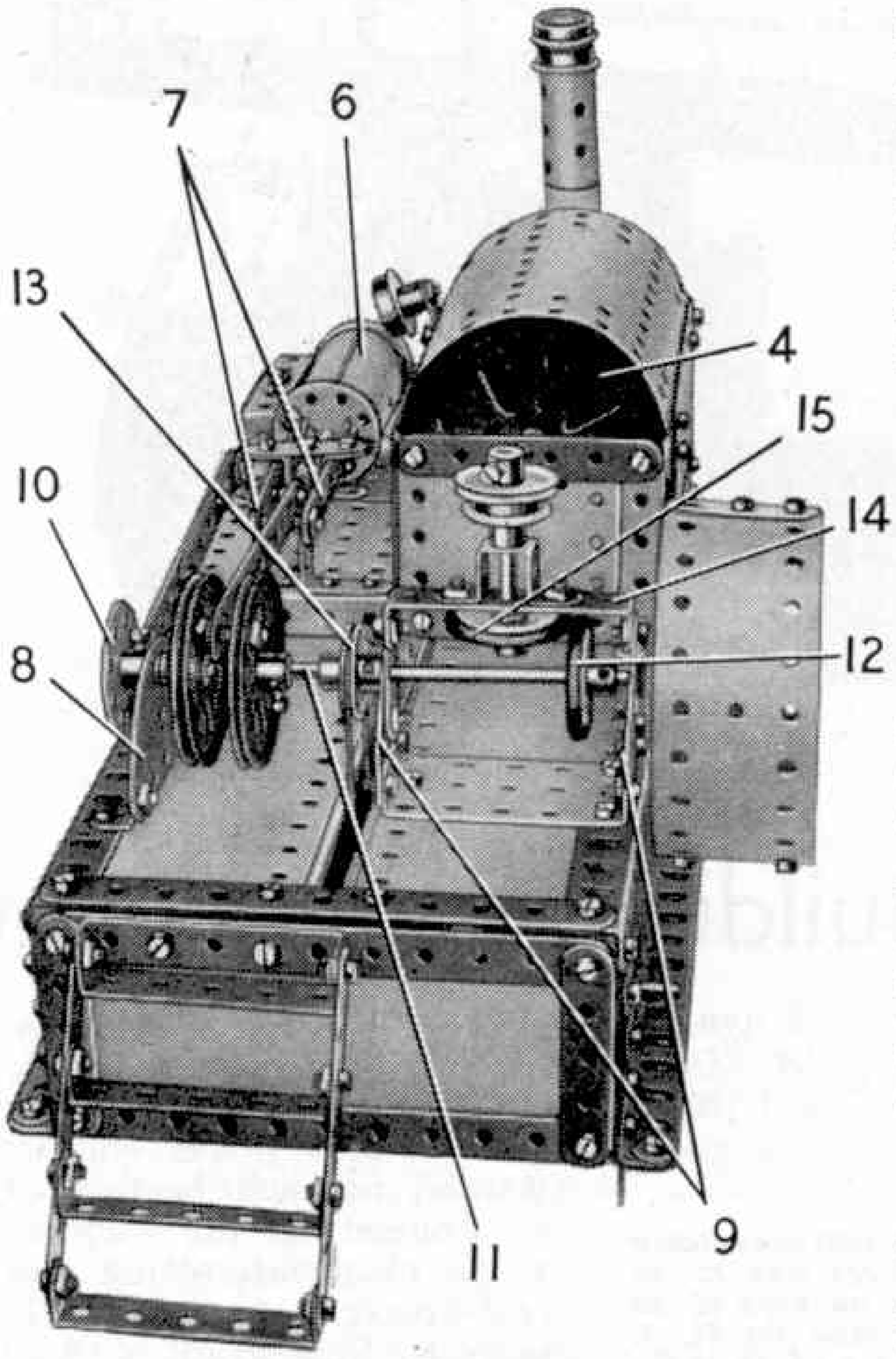


Fig. 2. Another view of the steam engine and boiler showing the details of the crankshaft.

on a 1½″ Rod passed through the Semi-Circular Plate 8 and fitted with a Bush Wheel 10. The other 2″ Pulley is carried by a Rod 11 that is fitted with a 1″ Pulley and Rubber Ring 12 and a 1″ Pulley 13. Pulley 13 is connected by a Driving Band to the ½″ Pulley 3.

The connecting rod is a 5½″ Strip lock-nutted to the Rod and Strip Connector on the piston rod, and pivoted on a ¾″ Bolt that connects the crank webs. The Bolt is passed through one 2″ Pulley and is fixed in place by a nut. The connecting rod is slipped over the Bolt, which is then fixed by two nuts in the second 2″ Pulley. Two Washers are placed on each side of the connecting rod to space it from the Pulleys. A built-up strip, consisting of a 5½″ and a 3½″ Strip overlapped five holes, is *lock-nutted* to Bush Wheel 10 and to the Rod and Strip Connector on the valve Rod.

The governor is represented by a 1″ Pulley and a ¾″ Flanged Wheel fixed on a 2″ Rod. The Rod is mounted in a Double Bent Strip and a 2½″×½″ Double Angle Strip 14, and it carries at its lower end a 1″ Pulley and Rubber Ring 15 that engages the Rubber Ring on Pulley 12. Three Washers are used to space Pulley 15 from the Double Angle Strip, which is bolted to 1½″ Strips fixed to the Flat Trunnions 9.

The flywheel rim is made from two 5½″×1½″ Flexible Plates and a 2½″×1½″ Flexible Plate connected to form a ring round a 3½″×½″ Double Angle Strip 16. This Double Angle Strip is clamped between two Road Wheels fixed on the end of Rod 11.

The model is completed by adding a ladder made from four 2½″×½″ Double Angle Strips bolted between two 3½″ Strips as shown in Figs. 1 and 2. The top ends of the 3½″ Strips are bolted to a further 2½″×½″ Double Angle Strip fixed to one end of the base.

Before setting the Engine in motion the gears and bearings should be oiled.

Parts required to build the Steam Engine and Boiler: 6 of No. 1; 11 of No. 2; 5 of No. 3; 2 of No. 4; 12 of No. 5; 3 of No. 6a; 8 of No. 8; 3 of No. 10; 3 of No. 11; 18 of No. 12; 4 of No. 12a; 1 of No. 12c, 1 of No. 14; 1 of No. 15; 1 of No. 15b; 2 of No. 16; 1 of No. 17; 1 of No. 18b; 2 of No. 19b; 2 of No. 20a; 4 of No. 20b; 4 of No. 22; 1 of No. 23a; 1 of No. 24; 2 of No. 24a; 1 of No. 26; 1 of No. 32; 131 of No. 37; 18 of No. 37a; 20 of No. 38; 1 of No. 45; 7 of No. 48a; 1 of No. 48b; 1 of No. 51; 2 of No. 52; 5 of No. 59; 2 of No. 80c; 1 of No. 111; 1 of No. 111a; 4 of No. 111c; 2 of No. 126a; 2 of No. 155; 1 of No. 162b; 2 of No. 163; 1 of No. 164; 1 of No. 186a; 2 of No. 187; 2 of No. 188; 2 of No. 189; 4 of No. 190; 4 of No. 192; 2 of No. 197; 2 of No. 212; 1 of No. 214; 1 of No. 216: 1 E20R Electric Motor

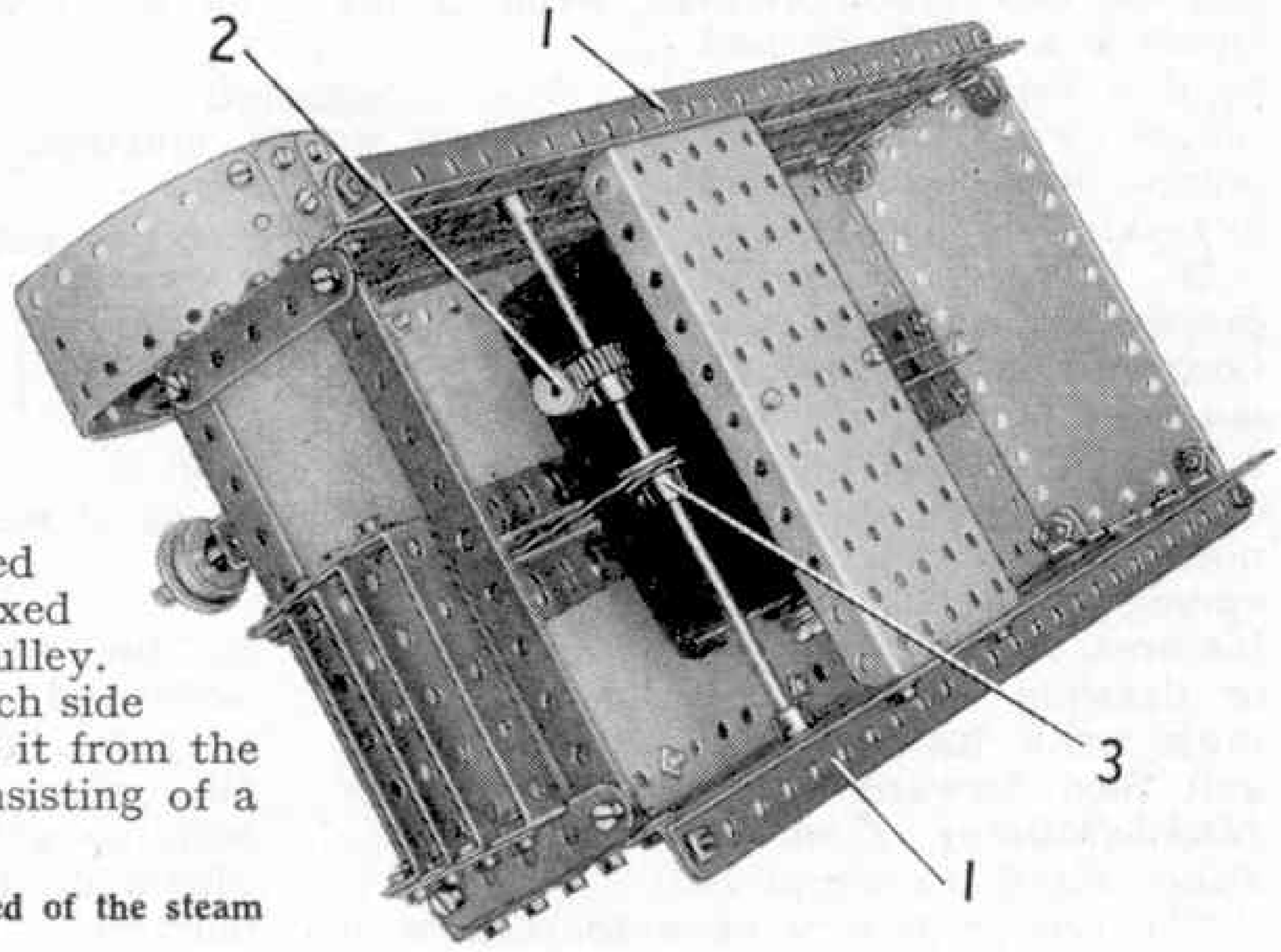
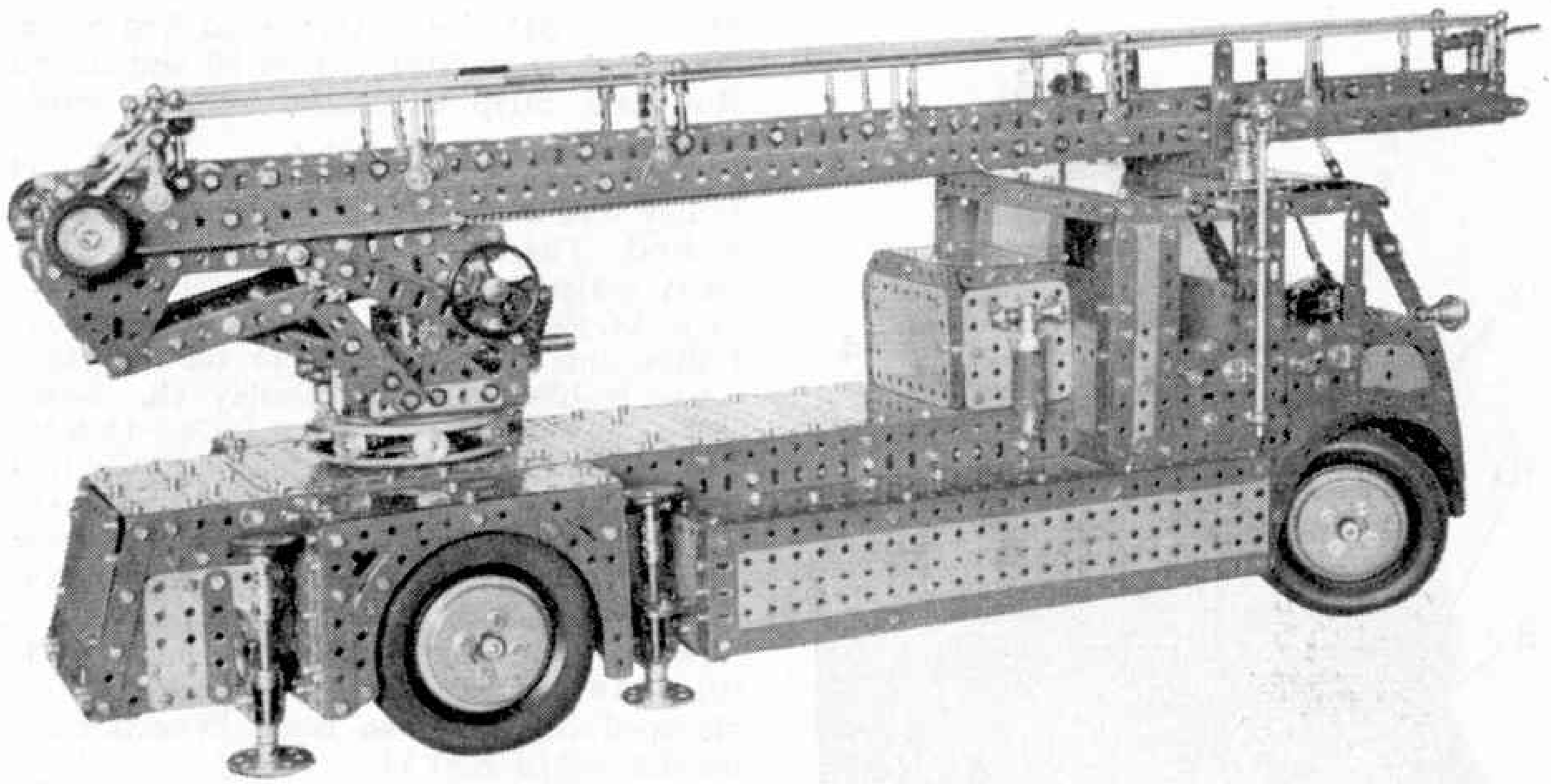


Fig. 3. An underneath view of the bed of the steam engine and boiler.



A Winter Model-Building Competition

WE are now in the peak period of the model-building season, and this therefore is a fine opportunity for a new general model-building competition in which every Meccano owner can take part. With this in mind we are offering splendid prizes, in the form of Cheques and Postal Orders, in a contest in which *models of any size and type can be entered.*

Simple cranes built with small Outfits, giant locomotives constructed from the largest ones, bridges, motor vehicles and machines of all kinds—all are eligible. Every model-builder should join in this grand contest, even if his Outfit is a small one and he is a beginner, for the judges will take these points into consideration in making their awards.

It is very easy to prepare an entry for this Contest. The model itself *must not be sent*; all that is required is a photograph or a good sketch, with any notes required to explain special constructional features. On the back of each photograph or drawing he sends in the competitor must write his name, address and age, and then forward his entry to "*Winter Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13.*"

The Competition is open to readers of all ages and is divided into two Sections, "*A*," for competitors *under 14 years of age*, and "*B*," for competitors *over 14 years of age*.

A complete set of cash prizes will be awarded in each Section of the Contest to the builders of the most interesting and well-constructed models received. Full details of these prizes are given in the panel on this page.

The well-built, neat and detailed model fire escape seen in the illustration at the head of the page won a prize for H. J. Halliday, London S.E.15, in the International Model - Building Competition.

In addition to the actual prizes a number of Certificates of Merit will be awarded to those competitors whose models fall just short of prize-winning standard. Prize-winners will be notified by letter as soon as possible after the closing date.

Competitors should note that the closing date in both Sections of the Contest is 30th April, 1954. Entries may be posted at any time before that date, but entries received after 30th April will not be eligible.

Photographs or drawings of unsuccessful entries will be returned to the sender only when a stamped addressed envelope is enclosed for that purpose. It should be noted, however, that photographs or drawings of prize-winning entries become the property of Meccano Ltd., and may be reproduced if suitable in the *Meccano Magazine*.

MECCANO
WINTER MODEL - BUILDING COMPETITION

The following Prizes will be awarded in each Section of the Competition:

First Prize - Cheque for £4 . 4
Second Prize - Cheque for £2 . 2
Third Prize - Cheque for £1 . 1
Ten Prizes each of 10/-
Ten Prizes each of 5/-

A number of Certificates of Merit will also be awarded.

Club and Branch News

WITH THE SECRETARY

MERIT MEDALLIONS

This is the month when, by long established custom, I have the pleasure of placing on record the names of members whom I have been happy to congratulate on winning the Merit Medallion during the past year. I gladly do so again this month. It is gratifying to note that Leaders are availing themselves increasingly of this excellent means of showing their appreciation of the good work of members.

Here is the 1953 list of Merit Medallion winners: BELGRAVE UNION (LEICESTER) M.C.—R. George; F. Johnson; D. Manship; M. Penrose; J. Stanley; T. White. CHRISTCHURCH (NEW ZEALAND) M.C.—W. Cheeseman; M. Frazer; W. Gordon; P. E. Saunders. COPDOCK AND DISTRICT M.C.—C. Rumsey; K. Whitten. EXETER M.C.—D. Asprey; T. Barrell; R. Came; R. Clarke; K. Creek; R. Hawkins; P. Staddon; R. Williams. FREMANTLE AND DISTRICT (AUSTRALIA) M.C.—M. Byrne; G. Shea. MAYLANDS (WESTERN AUSTRALIA) M.C.—I. Davies; R. Ellard; E. Hall; B. Lee; R. Pekin; J. Taylor. MILE END (PORTSMOUTH) M.C.—K. Clark; D. Evans; J. Jeffreys; S. King; L. Marsh; B. Pilcher. MYSORE (INDIA) M.C.—T. N. A. Balarajaurs; M. N. Radhakrishna. STRENSALL M.C.—M. Brown; M. Kendall; M. Lindsay; S. Shepherd; N. Smith; D. Spavin.

BRANCH RECENTLY INCORPORATED

No. 548. KENTISH TOWN—Mr. A. Edwards, 7, Busby Place, Kentish Town, London N.W.5.

CLUB NOTES

HORNSEA M.C.—A Beetle Drive was a great success, and added over £2 to the Club funds. Some excellent Meccano models were displayed, and a good supper was generously supplied by Mrs. Gall, the mother of one of the members. A film show has been held, at which films taken by the Leader were shown. Club roll: 11. *Secretary:* D. M. Stevenson, 29 Southgate Gardens, Hornsea, E. Yorks.

MILE END (PORTSMOUTH) M.C.—A Mock Trial at which members accused of "riding a cycle in a dangerous manner, thereby contravening the laws of road safety" were tried, provided great fun. At meetings announcements are now made through a microphone and loudspeaker assembled by the Club radio section. A bagatelle board has been bought. Meccano model-building and Stamp Collecting nights continue to be very popular. A Social Evening has been held, when members contributed song and harmonica solos. The Photo Section have been experimenting with table top photography. Club roll: 48. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

INDIA

MYSORE M.C.—The friends of members were invited to a recent Model-building meeting, and watched with great interest the construction of six interesting Meccano models. Afterwards the visitors congratulated the members on their skill. Club roll: 7. *Secretary:* Mr. M. N. Radhakrishna, 1096-Chamaraja Puram, Mysore City.

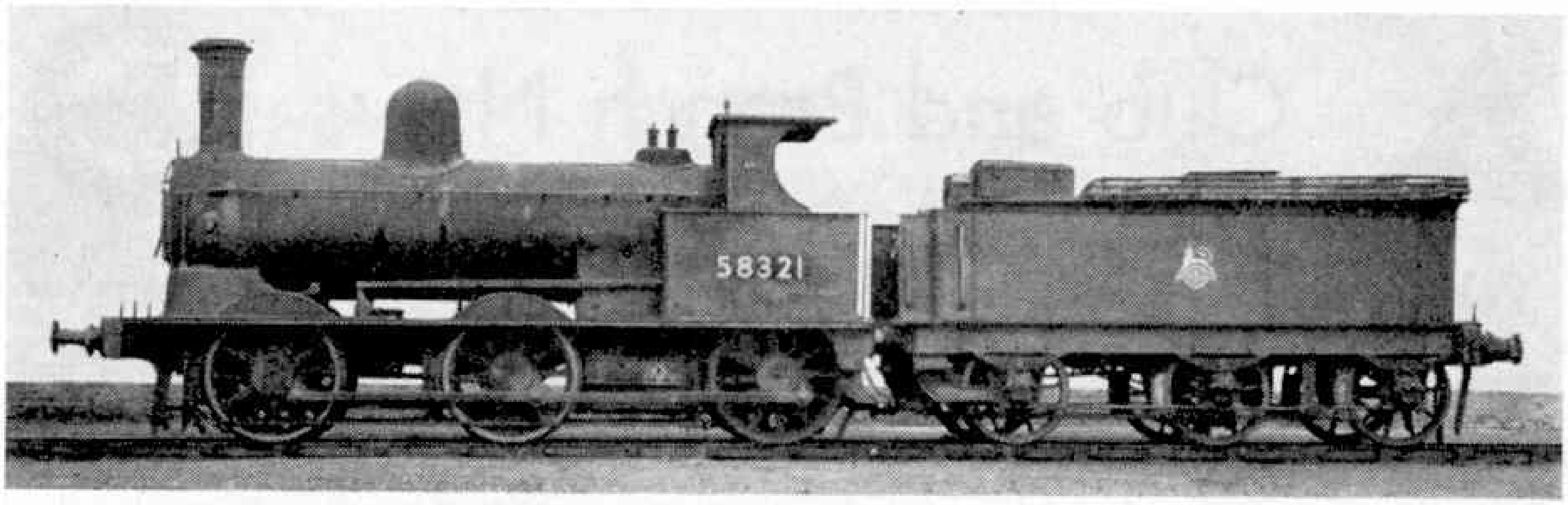
BRANCH NEWS

HINDHEAD AND DISTRICT—The Branch took part in a recent Hobbies and Leisure-Time Activities Exhibition held in the Haslemere Hall, Haslemere. The main feature of their display was a Hornby-Dublo track layout 7 ft. × 5 ft., fully signalled and with good use made of isolating rails, and including the new large radius curves. The operations carried out on this track were an immense attraction. There was always someone present to answer visitors' questions about the working of the layout and about the Hornby and Hornby-Dublo systems generally. At intervals scenery-making demonstrations, etc., were given. The publicity gained by the splendid display has brought several new members into the Branch. *Secretary:* B. J. Hinde, "Hindhead Brae," Hindhead, Surrey.

KENTISH TOWN (LONDON)—Before a member is allowed to use the Branch railway he must pass a simple test, and so far seven members have qualified. A new tunnel has been constructed on the Dublo layout, and lights fixed in the Dublo coaches and Dinky Toys buses. Cardboard modelling has become popular, and some good results obtained. A talk on the *Merchant Navy in the Far East* has been given by Capt. Hooper. *Secretary:* S. A. Kirby, 9 Busby Place, Kentish Town, London N.W.5.

MILE END (PORTSMOUTH)—The Branch's model town was loaned for display at a Sale of Work held recently at the Southern Grammar School for Boys, where there was also a Hornby-Dublo layout constructed by two of the pupils. Plans have been arranged for a series of Open Nights, and special attention also is being given to clockwork layouts in preparation for a Clockwork Exhibition in the near future. *Secretary:* J. C. Jeffery, 52a Elm Grove, Southsea, Portsmouth, Hants.

The striking Hornby-Dublo display which was an outstanding feature of last year's Annual Exhibition of the Belgrave Union (Leicester) M.C. The Exhibition resulted in a profit of over £36, a record for the Club. This fine Club was affiliated with the Meccano Guild in April 1950.



At Work for Over 80 Years

A Veteran Webb Coal Engine Retires

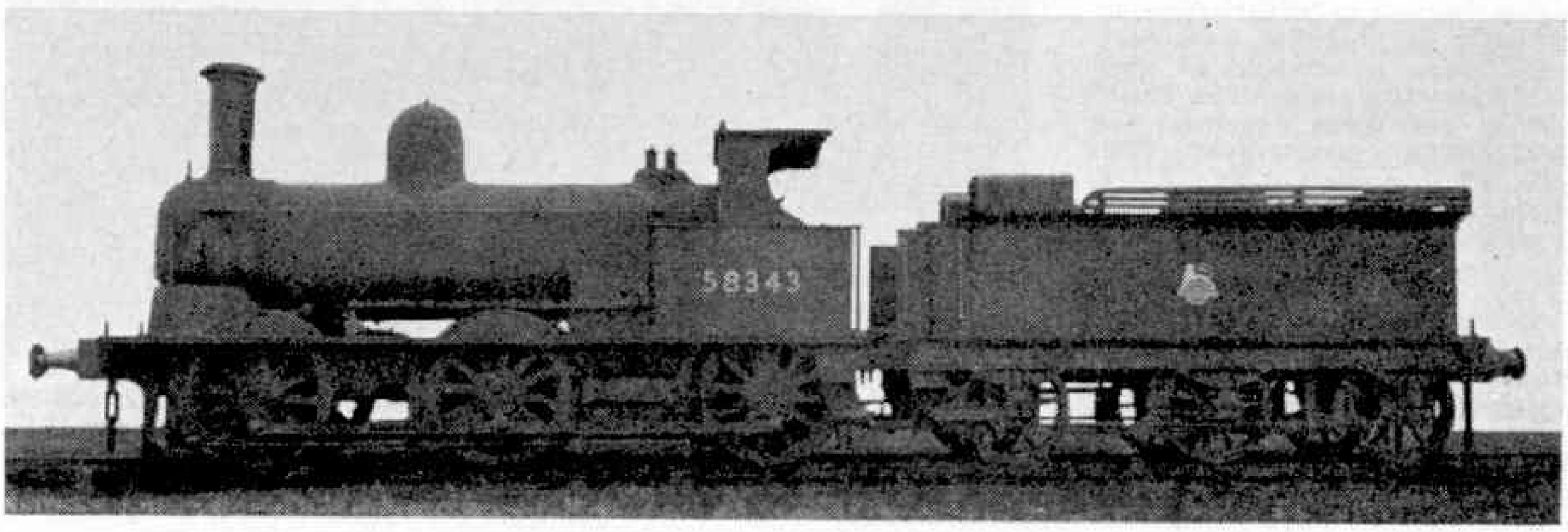
F. W. WEBB, the autocratic Chief Mechanical Engineer of the former L.N.W.R., who was virtually king of Crewe for over 30 years, can scarcely have anticipated when his first engine was built in 1873 that 80 years later it would still be at work, carrying the insignia of British Railways. But here is the veteran, as large as life, in the upper picture on this page. It has now been withdrawn, after ending its active career as No. 58321, one of the Crewe Works shunters. But one of the 0–6–0 "Coal engines," as the locomotives of this class were known, was withdrawn from service even more recently. This was No. 58343, built in 1881.

Above is No. 58321, the first of the Webb Coal engines, built in 1873 and only recently withdrawn. Below is the last engine of the class to remain in service, No. 58343 that was built in 1881. British Railways Official Photographs.

These two grand old veterans were part of a long line of similar engines, the construction of which was continued until 1892. All told there were over 500 Coal engines in L.N.W.R. service, and their characteristic beat was familiar all over the system.

Like most of the Webb simple engines, the construction of which went on side by side with that of the compounds so stoutly championed by their designer, the Coal engines were plain two-cylinder affairs of straightforward design. They have in fact been described as the simplest and cheapest engines ever built for their particular class of work. They did their job well, being rated to take 35 loaded wagons, or some 540 tons, over normal main line gradients at 25 m.p.h. throughout the year. Their cylinders were inside the frames, with the slide valves between them worked by Stephenson link motion.

In externals they followed the familiar Crewe lines and over the years the appearance of the class changed very little, although the sloping-fronted type of smoke-box fitted to the originals was later replaced by the more usual kind. The earliest ones too had no engine brake, but relied for stopping on the tender hand brake. Working this must have been a strenuous business for the old-time firemen, especially on a turn involving much shunting. Later the engines were fitted with steam brakes.



HORNBY RAILWAY COMPANY

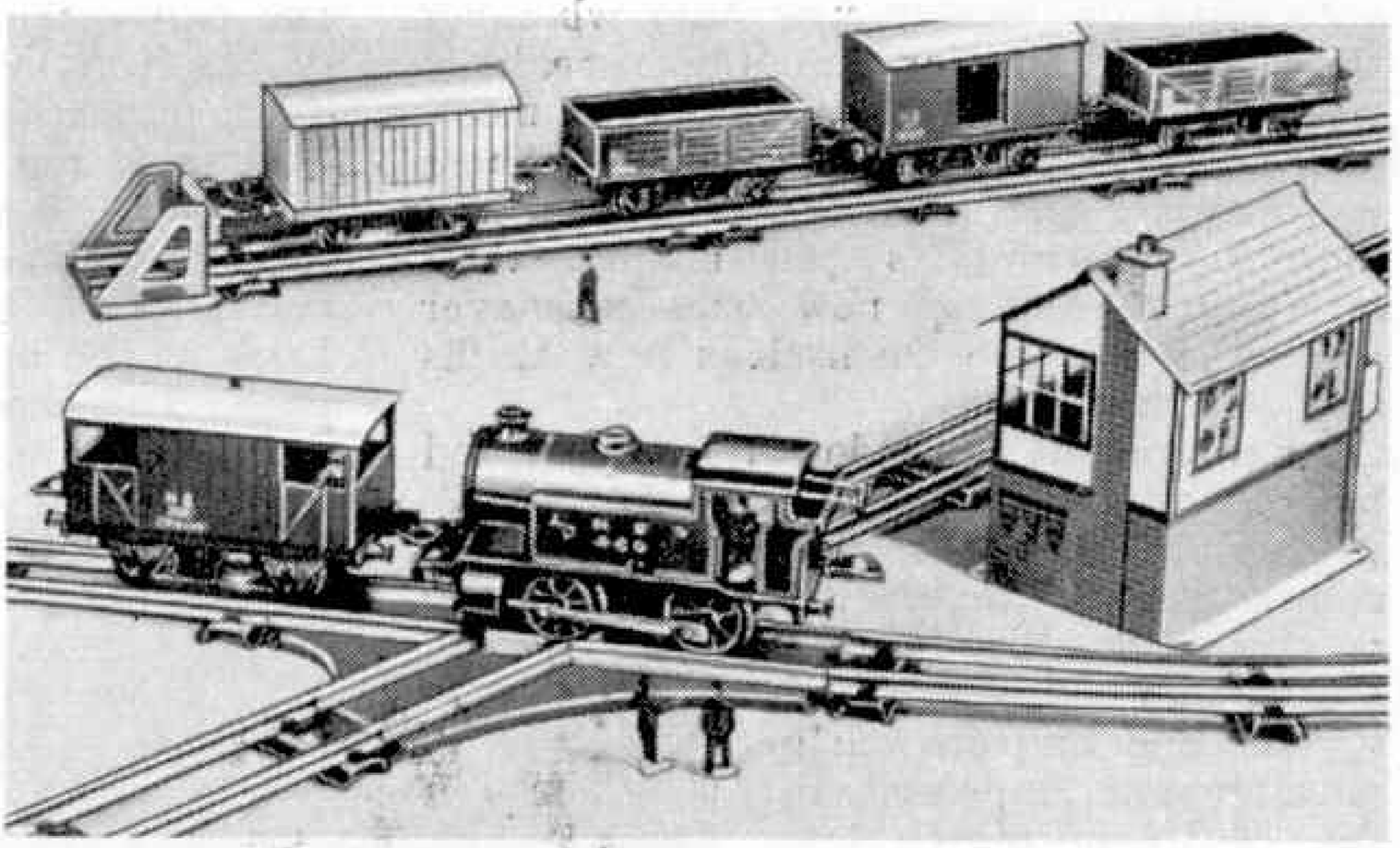
Track Crossings in the Hornby System

By the Secretary

I THINK that track crossings on real railways have a strong fascination for most of us. The often complicated manner in which tracks intersect one another, and the way in which trains seem to pick out their routes through a maze of tracks readily explains this.

The fascination of crossings extends to miniature railways, and the Hornby Railway owner nearly always wishes to add a Hornby Crossing to his equipment fairly early in his model railway career. There is something attractive about a Crossing in a miniature layout, especially if it forms part of a "figure 8" formation, so that the train passes over first one route and then the other of the Crossing. A thought that occurs to most youngsters concerns what would happen if the tail of the train were still passing over the Crossing with the engine approaching on the intersecting route; but somehow this puzzling situation never works out!

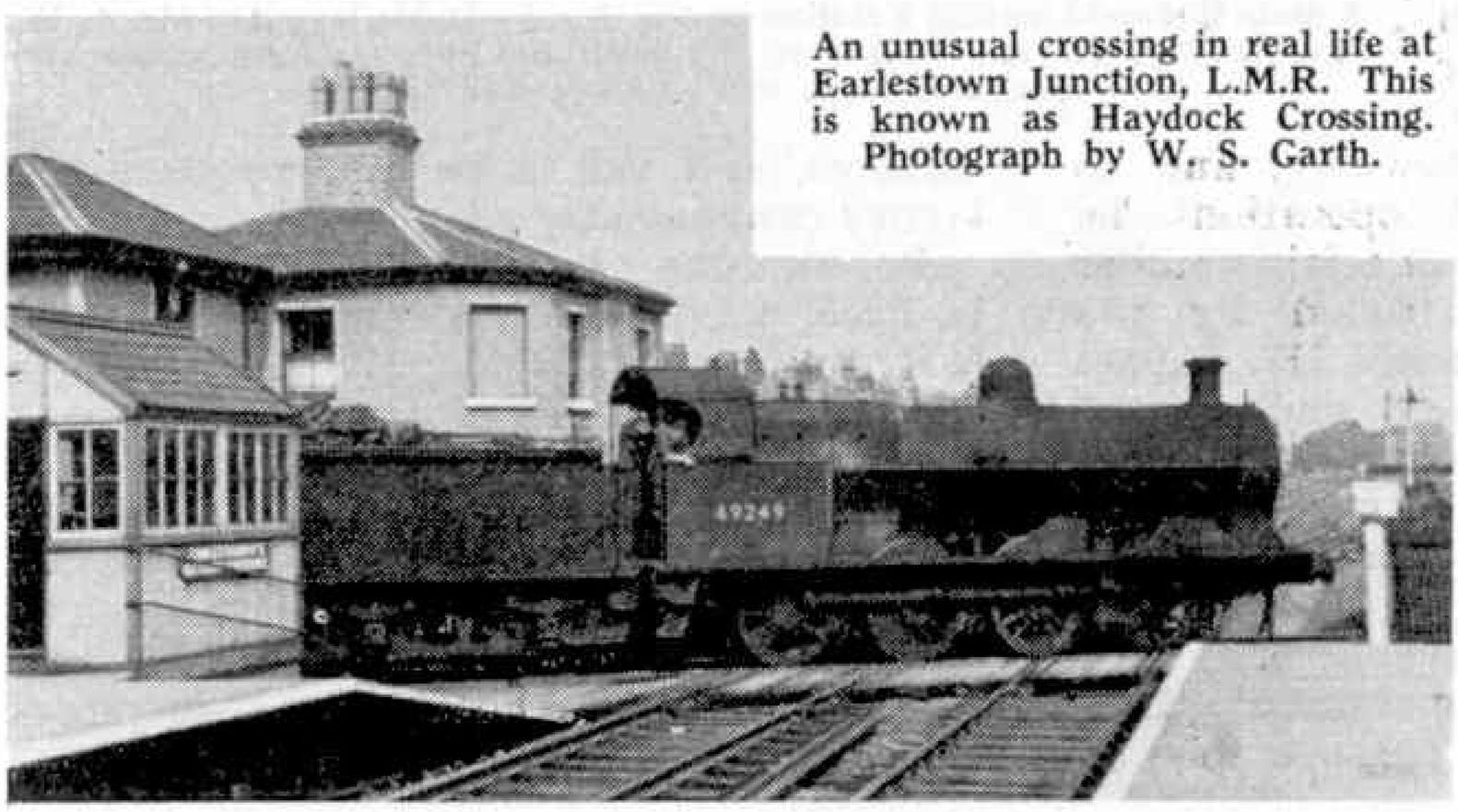
There are two kinds of Crossings in the Hornby system, the Acute Angle, shown in our upper picture, and the Right Angle, and uses for both of them are shown in the Hornby Train publication *Layouts for Clockwork Track*, a copy of which is included in all Hornby Train Sets except the M0. Hornby Crossings are not adaptable for use with M type rails.



A Hornby Acute Angle Crossing CA2 in use. We can suppose here that the engine and van are on a branch line intersecting the single track main line, which passes in front of the Signal Cabin.

Crossings in miniature, as on real railways, are invariably associated with tracks forming part of the same general route. But there are instances on our railways of main lines crossing one another on the level. For instance, there is the well-known crossing at Retford, where the Sheffield-Lincoln main line crosses the East Coast Route between London and Scotland, and an unusual instance of a colliery line crossing a main line is shown in the lower picture on this page. So crossings like that seen in our upper illustration are quite in order.

Examples of the use of what we might call independent crossings are sometimes found on larger layouts set up when two or three enthusiasts combine their equipment. This kind of railwaying is always fun, but traffic must be regulated carefully to prevent any mishaps at any of the Crossings.



An unusual crossing in real life at Earlestown Junction, L.M.R. This is known as Haydock Crossing. Photograph by W. S. Garth.

Always Something New!

Variety in Hornby-Dublo Layouts

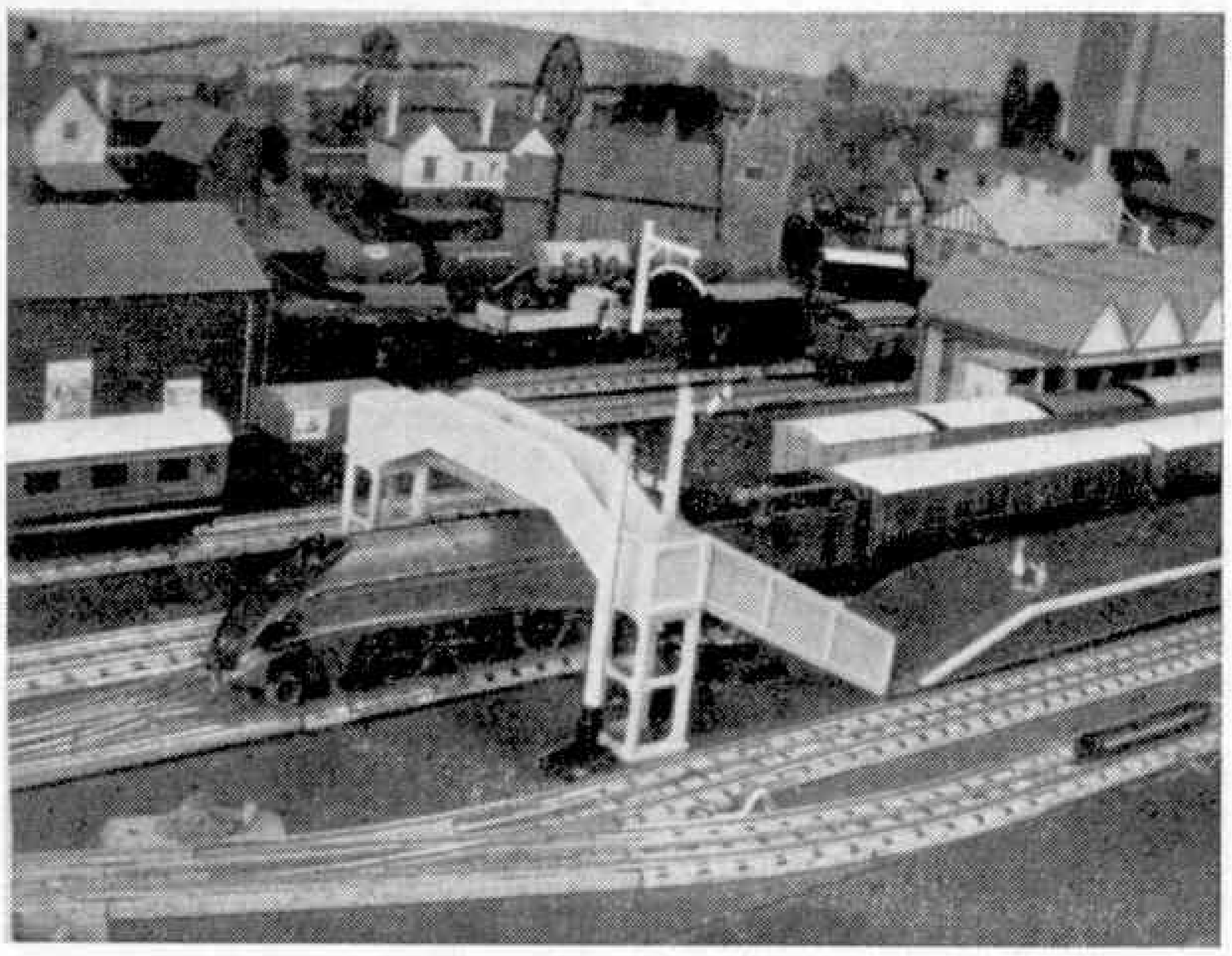
IT is interesting to see how Hornby-Dublo owners differ in their way of building up their layouts and of carrying out operations on them. Some are keen on the layout itself; others are strong on ideas for lineside accessories or develop new ones wherever they wish and for providing realistic surroundings; while many, perhaps most, concentrate chiefly on train running. There is certainly no lack of variety, and moreover enthusiasts can change their interests or develop new ones whenever they wish to give themselves new thrills and pleasures.

An interesting example of this is provided by the system belonging to Mr. A. W. Fry, Romsey, Hants., part of which is shown in the illustration on this page. Readers will recall that a description of the line and its early development appeared in the *M.M.* in March last year. Since then there have been considerable changes, and indeed more developments have taken place since the photograph reproduced here was obtained. There is indeed always something new on a Hornby-Dublo layout!

At an earlier stage Mr. Fry was particularly interested in working out a suitable setting for his railway, to make it look as though it really belonged to the miniature countryside and township he provided for it. Train movements and their control have never been far from his thoughts, however, and to provide for really good operations he arranged for the inclusion of a fair number of isolating sections controlled by the usual Hornby-Dublo Switches D2. Apart from the main line, loops and sidings have now been planned and incorporated with extreme care, with the result that the handling of traffic is carried out in a most realistic manner, even though a single operator only is usually available.

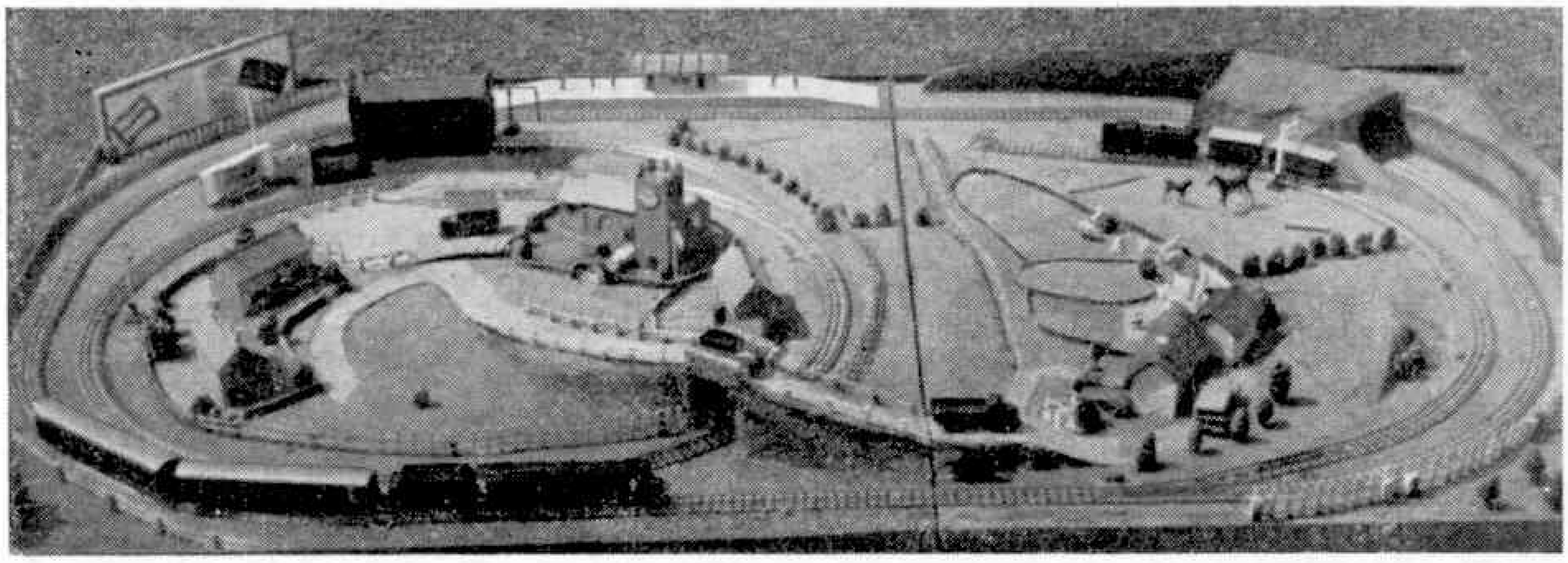
The successful working out of these schemes has been helped considerably by the fact that the layout is on a permanent baseboard. This means that it has been readily possible to fit up the control panel and electrical arrangements apart from the baseboard itself. Again, wiring could be run below the baseboard, where it is out of the way and not liable to accidental derangement.

It must not be thought that those who are unable to arrange a permanent system must forgo the pleasure of running their trains in a realistic manner, however. Look at the upper illustration on the next page. This shows the semi-portable system developed by Mr. A. F. Greenman, of Oxford, who wished to install a layout 6 ft. 6 in. long by 4 ft. wide, with scenic features, and yet to be able to store the layout conveniently when not in use.



A main line train leaving a station on the Hornby-Dublo layout of Mr. A. W. Fry, Romsey. The use of standard Hornby-Dublo Points to form a crossover, platform loops and so on is well shown.

For running purposes the layout had to be accommodated on a dining room table 6 ft. by 3 ft. and this provided adequate support for the piece of hardboard forming the main base for the railway. For convenience in handling this had to be arranged in two pieces, and the layout was so designed that only the two straight sides of the main single track oval have to cross the joint between the two pieces of the board. With this arrangement



The two-part portable Hornby-Dublo layout of Mr. A. F. Greenman, Oxford. Although this system can be dismantled for storage, it includes lineside and natural features, not too crowded, inside the main track.

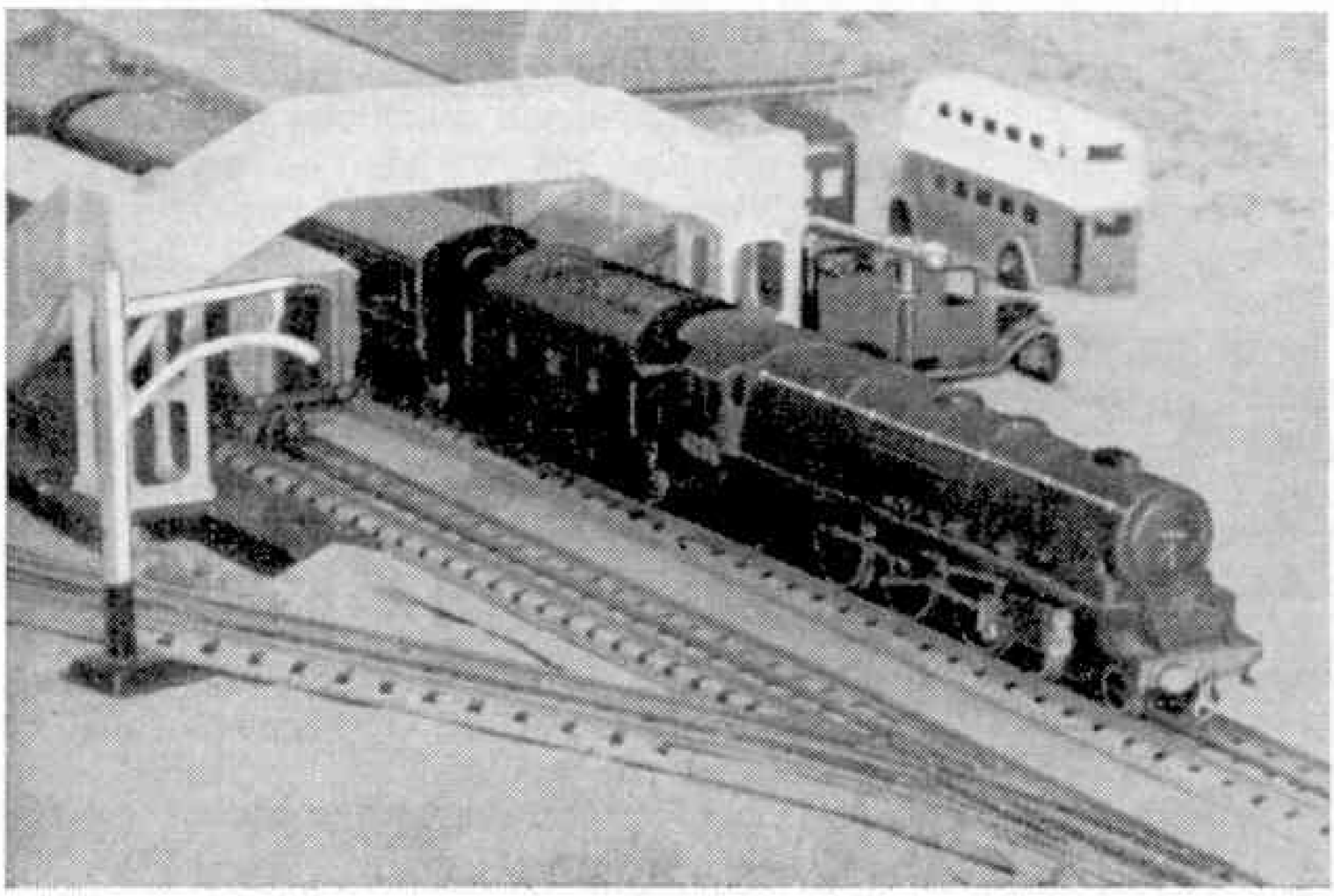
Mr. Greenman has overcome most of the difficulties of not having a permanent home for his layout.

Two Straight Quarter Rails form the bridging members that actually take the track across the joint. These are detachable, but are easily connected to the lengths of track adjacent to the gap, which are screwed down on the hardboard base. The single main line throws off a siding line that is accommodated entirely on one section of the baseboard. In the other section an additional track, practically circular in form, is connected to the main track by means of crossover points, and this inner circle provides access to a further siding leading to an engine shed.

Mr. Greenman has also been able to extend his interests by developing a satisfactory countryside. There are a tunnel and short cutting on the outer main track, while the inner track encircles a small but pleasing village, including houses and a Church, access to this section being provided by a roadbridge with an effective and realistic approach. Naturally Dinky Toys abound on the road that passes from the village over the railway to a farmstead arranged on the other section of the baseboard. Wood and card were used extensively in providing the various buildings, while sawdust, sand, and fir cones, coloured, have all helped to provide the countryside with realistic features.

Another simple system, on which running operations have so far provided chief interest, is that belonging to David Hulme, who was living in Birmingham at the time when the photograph of the line was taken by Mr. J. F. Gordon, of Blackwell. The photographer in fact is quite envious of the young railwayman and his friends, so that it would not be surprising to hear that he had begun a system of his own! The layout consists of an oval track, a loop line and two or three sidings.

Operations at the one station on the line are occasionally enlivened by the arrival of a "slip coach." This forms the last vehicle of a four-coach train headed by a Hornby-Dublo "Duchess." It is detached by the movement of an uncoupling ramp as the train approaches the station and nice judgment of the speed of the train and of the precise moment at which to operate the ramp are needed.

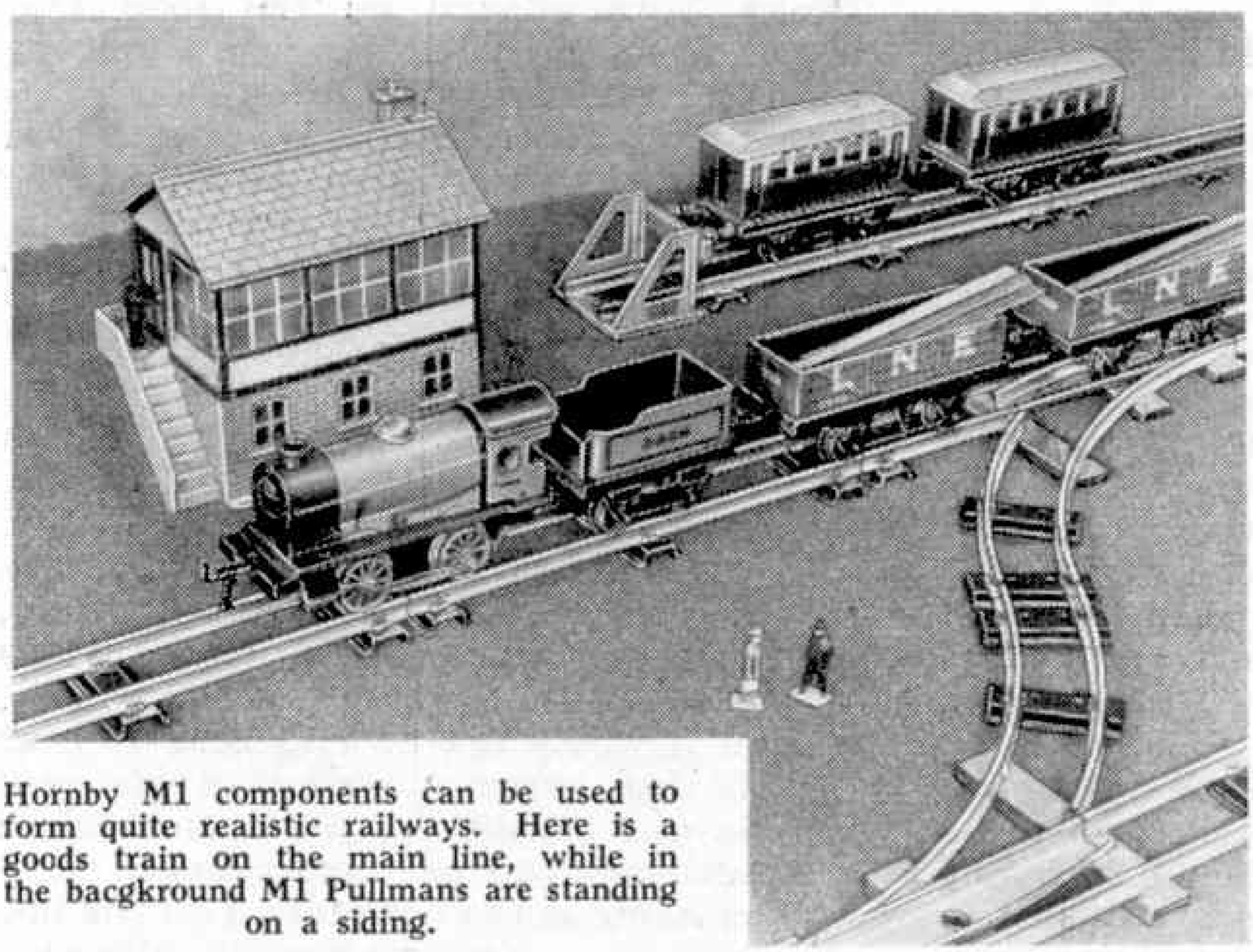


A realistic departure scene on the layout of David Hulme, photographed by Mr. J. H. Gordon, Blackwell. The station arrangements and the road traffic vehicles play an important part in the realism of this view.

For New Hornby Railway Owners

How to Make a Good Start

ALL Hornby railway owners will agree that it is good fun to build up a Train Set into something more exciting and it is in that way that most miniature railways develop. In the early stages of our railwaying we usually devote more attention to extending the track, and making up more ambitious layouts than the simple oval with which we began operations. Then as the track grows the need for additional rolling stock is usually felt, if only to take advantage of the capabilities of our engine, which can be expected to show up and perform really well on a more extensive track.



Hornby M1 components can be used to form quite realistic railways. Here is a goods train on the main line, while in the bacgkround M1 Pullmans are standing on a siding.

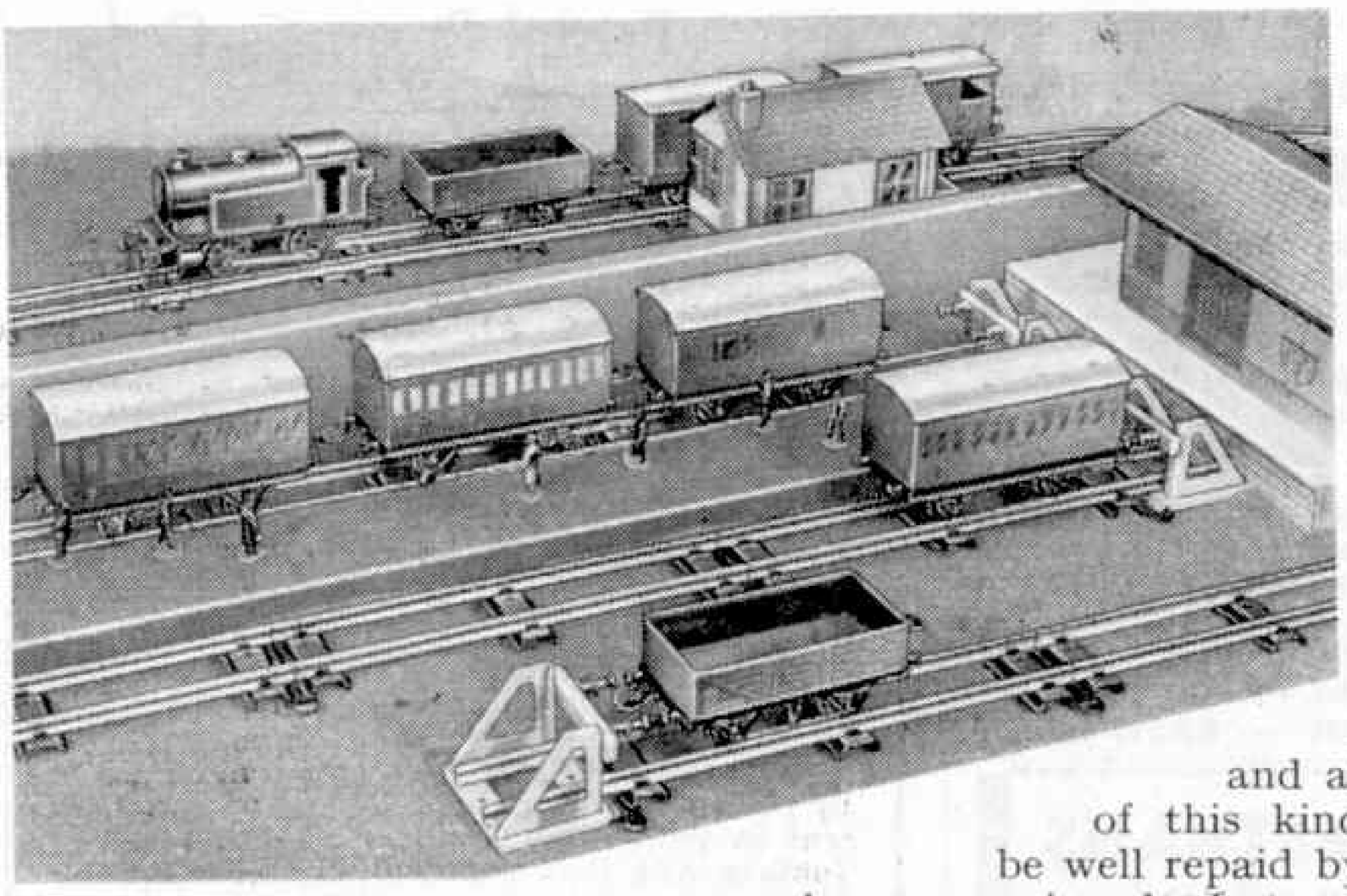
Taking the smallest Hornby Trains first, those of the M0 kind, the position is quite simple, as the M0 components that are included in the Sets can be obtained separately as well. There is in addition a small range of varied vehicles of a size and type suitable for adding to M0 Trains. These will run on the 9 in. radius curves provided in the M0 Sets, and their couplings are of the simple fixed tongue-and-loop kind characteristic of M0 Trains. The owner of an M0 train is therefore in a comparatively happy position, although additions to his track have to take the simple form of lengthening the layout only. There are no M0 points or crossings.

While the M0 range is thus more or less self-contained, the remainder of the Hornby rolling stock now listed can, with certain exceptions, be used in conjunction with any other Hornby Train Set. No Hornby railway owner therefore need be at a loss in choosing vehicles to build up quite varied trains. Mixed freights such as those commonly found on pick-up duties are readily arranged, while at the other end of the scale the important perishable or express goods made up throughout of similar vans also can be assembled.

The standard Hornby vehicles have automatic couplings and their addition to the components of any of the Hornby train sets Nos. 101 to 601 does not present any difficulty. Where an M1 train set is in use, however, the position is not quite so straightforward. Instead of automatic couplings M1 Trains have simple hook and link type couplings, and beginners sometimes ask how these are expected to be used in conjunction with stock having the standard automatics. The answer really is that the latter is not designed for use with M1 components, but M1 owners frequently make use of the standard stock because there are at present no M1 vehicles available separately. Actually the two types of couplings can be used together, but care should be taken that the loop of the automatic couplings is placed over the hook of the plain type. This arrangement works satisfactorily as long as the engine is pulling its load, but some difficulties may be caused when a train is being backed, especially over 1 ft. radius reverse curves.

Curves do affect matters in another direction, because an engine cannot be expected to pull a greatly increased load over a layout consisting largely of curved sections. Another point is that the

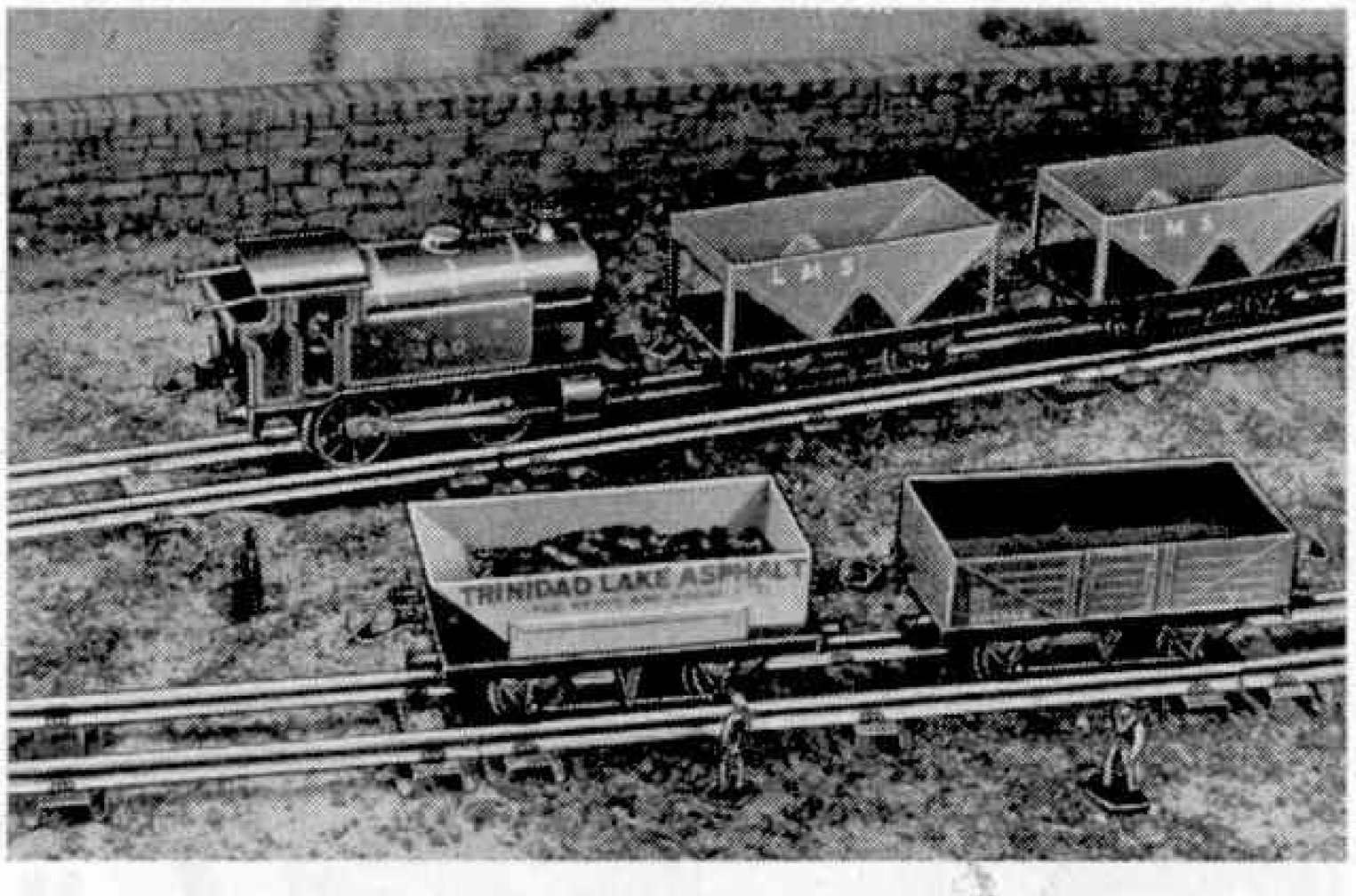
Hornby No. 1 Coach and the corresponding Passenger Brake Van cannot be expected to run on 1 ft. radius layouts. Their fairly long wheelbases and the consequent overhang of their couplings at each end are against successful operation in this way. The other vehicles are not so restricted, so that they can be run on 1 ft. radius curves common to M1 outfits. The M1 engine however cannot be expected to pull many of these vehicles in addition to its normal load of M1 stock. The standard vehicles are somewhat larger in general dimensions and are therefore heavier. This is a point that is sometimes overlooked by M1 owners.



Carriage sidings and a depot building are represented here. Hornby No. 1 Passenger Coaches are being serviced.

In running rolling stock of any kind it is essential to see that the wheels run freely, the odd spot of oil now and again on the axle bearings being provided as a matter of course. Another point is that the running of a train on curves will be eased if we make sure that the couplings of all rolling stock can pivot freely. A drop of oil on the eyelets is a great help in this direction.

We must watch too that the coupling links or loops move easily, as intended, otherwise we are likely to run into difficulties when carrying out shunting operations. We should see that the hooks retain their original form, and any that do become a bit out of shape, owing to rough shunts or collisions, should be corrected with the aid of a small pair of pliers. These simple maintenance jobs soon become a habit, just as the care of real engines does to their drivers and firemen, and attention given to matters of this kind from time to time will be well repaid by the trouble-free running enjoyed. Lots of Hornby railway owners do this sort of thing as a matter of routine, but there are many others who do not! These should resolve to become real railwaymen on their miniature layouts; if they do they will enjoy all the greater fun with their trains.



A Hornby Tank Locomotive shunting a train of Hopper Wagcns ready for the main line run of a coal or mineral train.

With goods vehicles, particularly the open Wagons, there is a lot of pleasure in devising simple loads for them to carry. Apart from items of miniature merchandise that can be obtained at many hobby shops, it is possible to make use of all sorts of odds and ends that can be found at home, such as matchboxes, cotton bobbins, little cartons and similar items.

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For other Stamp Advertisements see also pages 100 and xvii.

Stamp Collectors' Corner

F. E. Metcalfe

ROYAL VISITS

TO continue the notes of last month on the stamps issued to commemorate the various visits of the Royal Family overseas, we now come to the pair of stamps emitted in 1952 by Kenya, in honour of what proved to be a tragic visit by the Queen and the Duke of Edinburgh. In view of the death of King George VI, and the drastic shortening of that visit, these stamps were only on sale for a few days, and it was thought at the time that they might prove very scarce, but later the Crown Agents disclosed the figures of numbers sold. They were 1,020,044 of the 10c. value, and 320,409 of the 1/–. As few of the stamps would be destroyed, even those used on commercial correspondence, there will surely be enough to go round for a long time to come. The present price is about 4/– a pair, and it is quite enough.

And now we come to the latest and longest of these Royal Visits. Just how extensive is the present trip can be seen by the number of countries releasing stamps in honour of the calls.

Of the colonies, we get single stamps for Bermuda, Jamaica, Fiji, Kenya, Malta, Gibraltar and Aden, in that order. Ceylon, New Zealand and Australia have honoured their guests philatelically, and even Tonga joined in with a last minute surprise. Just a word on the value of the stamps. Tonga will be a tough item to get hold of cheap, but even though all the rest have short lives, do not think that they will be scarce in consequence, for so great is the interest in the trip that many will buy. The dealers, knowing this, have made plenty of provision.

Bermuda was the first with an adaptation of the new 6d. stamp. The frame had been altered, and the words "Royal Visit" incorporated in the design, a much better plan than merely overprinting, which collectors do not like for some unaccountable reason. Jamaica followed with an adaptation of the current 2d. stamp, but as this colony was still using stamps bearing a portrait of the late King George VI, the portrait also had to be changed.

Then followed Fiji, with the 8d. stamp, and it was after this that Tonga produced their shock, by placing on sale in the post office the current 8d. overprinted. The first that British dealers heard of this emission was when the Crown Agents inserted a leaflet in their bulletin for December giving the news. Even they had only heard late on, or the information would have been included in the bulletin itself. Anyhow, dealers hopefully cabled cash to the territory, but alas, later came the bad news that stamps could only be bought over the post office counter. A dreadful business for dealers with a new issue service, for you know how impatient collectors can get!

After all the trouble that Tonga gave, it was nice for all concerned that there were supplies of the rest for everyone. Both Australia and New Zealand had special sets for the great event. There had been a certain amount of criticism about New Zealand's philatelic effort but, all in all, this was mostly unjustified. Maybe New Zealand always has such very nice stamps that too much is expected.

Single stamps for Aden, Ceylon, Kenya, Gibraltar and Malta complete the philatelic picture of this epoch-making trip, and collectors can feel very proud that they are so closely connected with the great event. Now is the time to get the collection together. You do not need a very large album. A loose leaf of medium size, costing from about 17/– to a guinea, will serve your purpose admirably. And just do a bit of practising with your handwriting, for a collection looks much more personal if done by one's self. One may go to big exhibitions and see the exhibits all written up in copper plate; but this is all so obviously the work of professionals, and no matter how nice it all looks a collection neatly arranged by the owner is much more thought of.

I have said that now is the time to get a collection together. With the exception of Tonga, all the tour stamps can be obtained at very reasonable prices, for the very popularity of the events commemorated means that many buy. Thus the stamps are not scarce, but many new collectors are coming in, and gradually stocks of the earlier "R.V." commemoratives will be absorbed. That means rising prices.

There is of course no need to break one's finances all at once. Get your album, and then pick up the sets as and when you come across them, and can afford to buy them.

There is another angle to making a "R.V." collection. This should not be looked upon merely as a money-making venture. It is so much more than that. The Queen has already expressed a desire to visit Jamaica again, and there can be little doubt that many more visits will be made overseas. If to other parts of the Commonwealth, special stamps will also be issued, so the collection made now will not be a dead one. Can you imagine anything nicer to show to your friends, even if they are non-collectors, than a collection of attractive stamps, each and every one with a story behind it?

Collectors really are lucky people. All the world is becoming stamp conscious. (*Continued on page 104*)

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For other Stamp Advertisements see also pages 98 and xvii.

Stamp Gossip

DESIGNS

I HAVE been looking through the stamps I received last year in the ordinary course of correspondence, and have tried to pick out the most beautiful foreign stamp, as distinct from those issued in our British Commonwealth. My humble opinion is that Israel has it. Unfortunately it is not possible to reproduce the exquisite colouring of this stamp, but even the design alone will show what a handsome issue we are dealing with. It appeared on 20th September 1953 in honour of the 4th Maccabiade. I have previously referred to the beauty of Israel stamps, but on this occasion the printers, and of course the designer, have excelled themselves. Next month I will tell you which of our Commonwealth stamps pleased me most.

TAKE A GOOD LOOK

Dealers buying collections after the deaths of their owners often find that for a long time they had not even taken the trouble to remove their new issues from the envelopes in which they were received. How wrong all this is, for with the world's finest artists designing and engraving for stamps, it is all sheer waste if one does not take the trouble to see what they have produced. Their work, being produced in miniature, must be carefully studied, and the method of viewing comic strips will not do.

To show what I mean, just examine the Uruguayan air stamp illustrated. The plane in the sky, with its shadow on the Earth, is obvious enough, but what is that irregular patch of colour down by the left bottom corner? One must examine it carefully, and then it can be seen that it is a diligencia, as they were called in Uruguay, their equivalent of our stage coach. Having noted this, the motif of the design, then and now, is understood, and its aptness as a commemorative issued to celebrate the 75th anniversary of the Universal Postal Union is realised.

NO ADVERTISING

Like the B.B.C., most governments have an advertising ban when it comes to a question of postage stamps providing publicity for some business. That being the case, it will be realised what a fuss there would be when it was noticed by competitors that the stamp issued by the U.S.A. Government to commemorate the 50th anniversary of what they call the Trucking Industry, actually provided an easily recognisable illustration of a certain make of truck. Even the driver was discernible, for apparently the design of the stamp was based on a poster or photograph that was well known. After the rumpus certain alterations are supposed to have been made, but still we have a stamp, only costing a couple of coppers, which owing to the interesting story behind the design, is well worth a place in a general collection.

STAMPS OR LABELS

Referring to another letter which a reader sent, she—yes, it was a lady this time—wanted to know if all those fine funny shaped stamps which are supposed to be issued by Tanna Touva really belong to that country at all? Well it is true that some of these stamps actually appear in some catalogues. Thus one may think that they are genuine, but there is some doubt about them that it has never been possible to clear up.

The writer once stuck several on an envelope and addressed the latter to the Postmaster, with a request that the stamps would be cancelled, and the cover returned through the post in the usual way. In due course the envelope did come back, with plenty of big postmarks in purple. But—and it is a big but—there was no evidence that the envelope ever got beyond Moscow. In fact, the writer does not believe that it ever did.

Nevertheless these diamond and triangular shaped stamps, with their florid designs, seem to have the backing of the Russian Government at any rate. As this government runs the country, readers can put their own interpretation on the matter, and consider the products as stamps or merely labels, according to their taste. But it is rather silly to spend money on such things, when our Commonwealth is producing so many beautiful and pukka stamps just now.

ANGOLA

Wouldn't it be fun to live in a country—or would it?—which had roaming in the background animals such as lions, hippos, giraffes, rhinos, buffaloes, crocodiles (ugh), antelopes, etc.? Well there is such a country, the Portuguese Colony of Angola, and it has just issued a set of stamps showing all these animals, and many more. A delightful set, and one within reach of all. Perhaps not all of us can afford **all** values, but a short set, showing a real zoo, can be obtained for less than 2/–.

TIPS!

I know how readers like a tip or two, or shall we say a bargain, for I think that we should not buy stamps just for profit; if we do, we must not call it collecting. All will remember the set that British Honduras issued in 1949, called the St. George's Day issue. A set can still be bought for about 4/–. If you need a set for your collection, don't delay. It is going to cost quite a bit more later on. There is a big demand from the U.S.A., and stocks in the U.K. are drying up.

A collector who intended to start a little K.G. VI collection seemed surprised when I told him that many stamps in this group had gone obsolete recently, and is now dashing round trying to catch up. That's a tip for all who are of the same mind.

From Our Readers

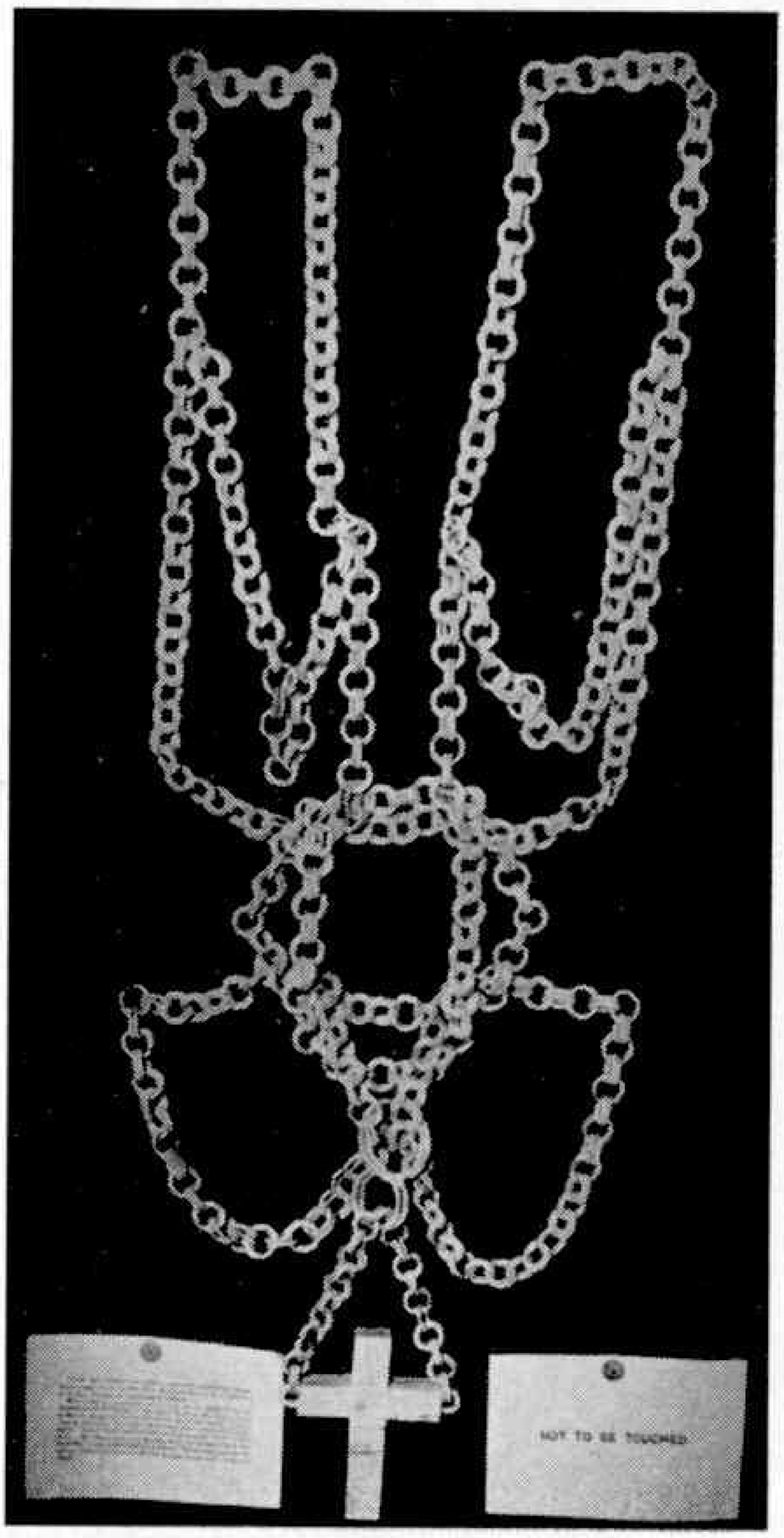
This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A REMARKABLE WOOD CARVING

As an example of skill and patience the piece of carving illustrated below takes some beating. It is a cross and chain cut from a single block of lime wood some years ago by the Rev. W. Mayo, M.A., rector of Folke, Dorset, and now to be seen in the church.

The cross is suspended by a chain of 23 links from an ornament in the shape of the figure 8. This chain and the others forming part of the design are interlaced with each other, and all the links are double with the exception of one near the cross that has been destroyed by a worm. Altogether there are 769 single links, all cut from one block of wood.

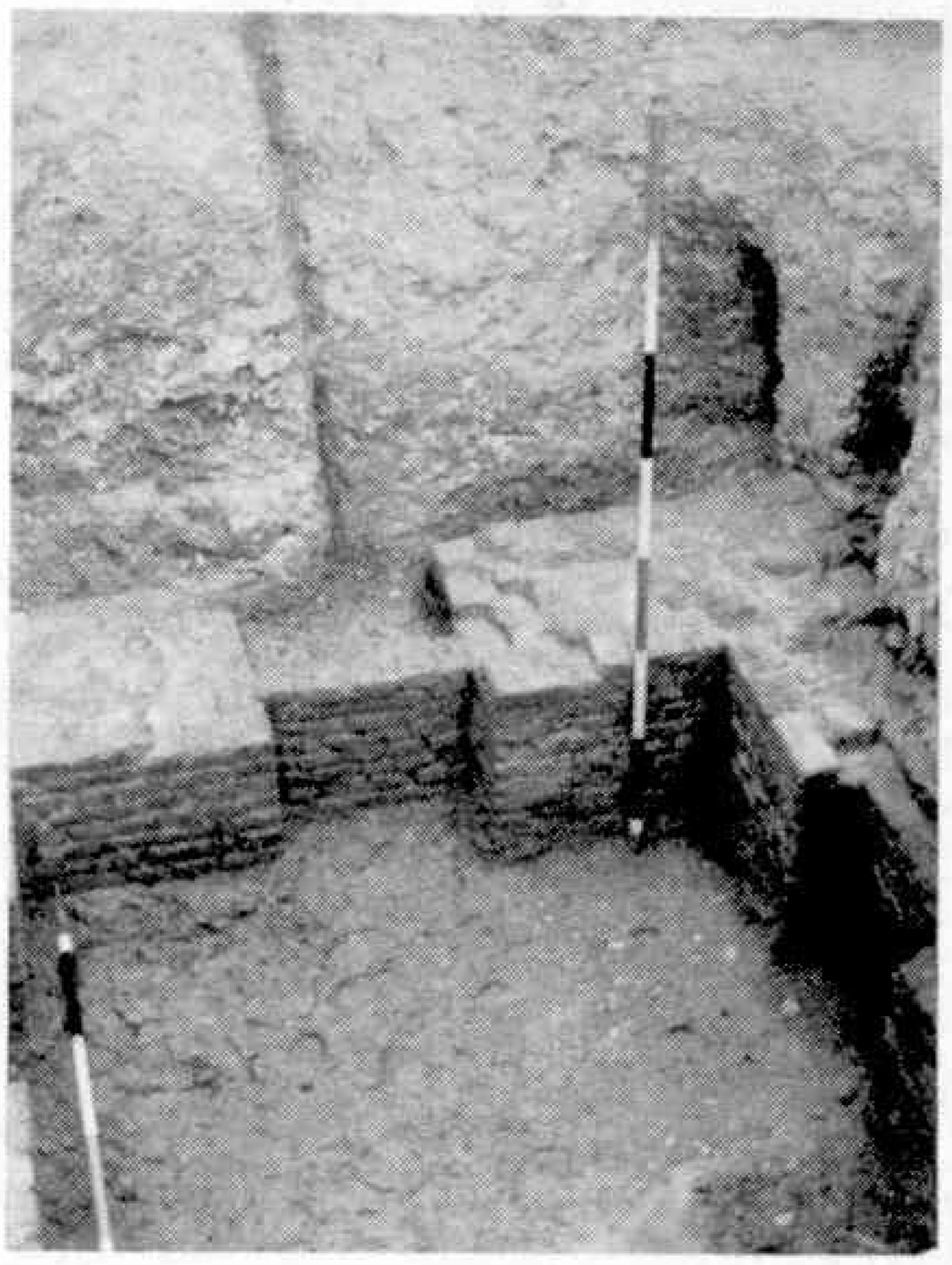
R. DIXON (Gloucester).



A cross and chain carved out of a single block of wood. Photograph by R. Dixon, Gloucester.

AN ARCHÆOLOGIST AT WORK

As a keen *M.M.* reader and an amateur archæologist I read with interest Mr. Robins' article on *Excavating in Dorset*, in the October issue. During the past summer holidays I dug with the Merchant Taylor's Archæological Society, of which I am a member, in Moor Park, near Watford. This was the site of a Tudor mansion, that at one time was occupied by Cardinal Wolsey. It dates much further back than Tudor times, for it is found in ancient documents to have been bestowed on the Monastery of St. Albans by a certain King Offa in penance for a murder he had committed in A.D. 793.



The garderobe of a Tudor mansion, the excavation of which is described in the accompanying article. Photograph by H. E. Collis, Croxley Green.

Our dig last year was mainly concerned with a garderobe pit, the Tudor equivalent to the modern sewerage system. It was excavated during part of the summer term, and during the holiday we got it down to fifteen feet. In it were found a shoe, two pots, numerous potsherds and pieces of stained glass and window leading. Also twenty-one eggs were found and a bronze letter "S," the twenty-first of its kind in the country. In another trench we had a wall, four mortar floors of different periods, then another wall and then a cobbled floor.

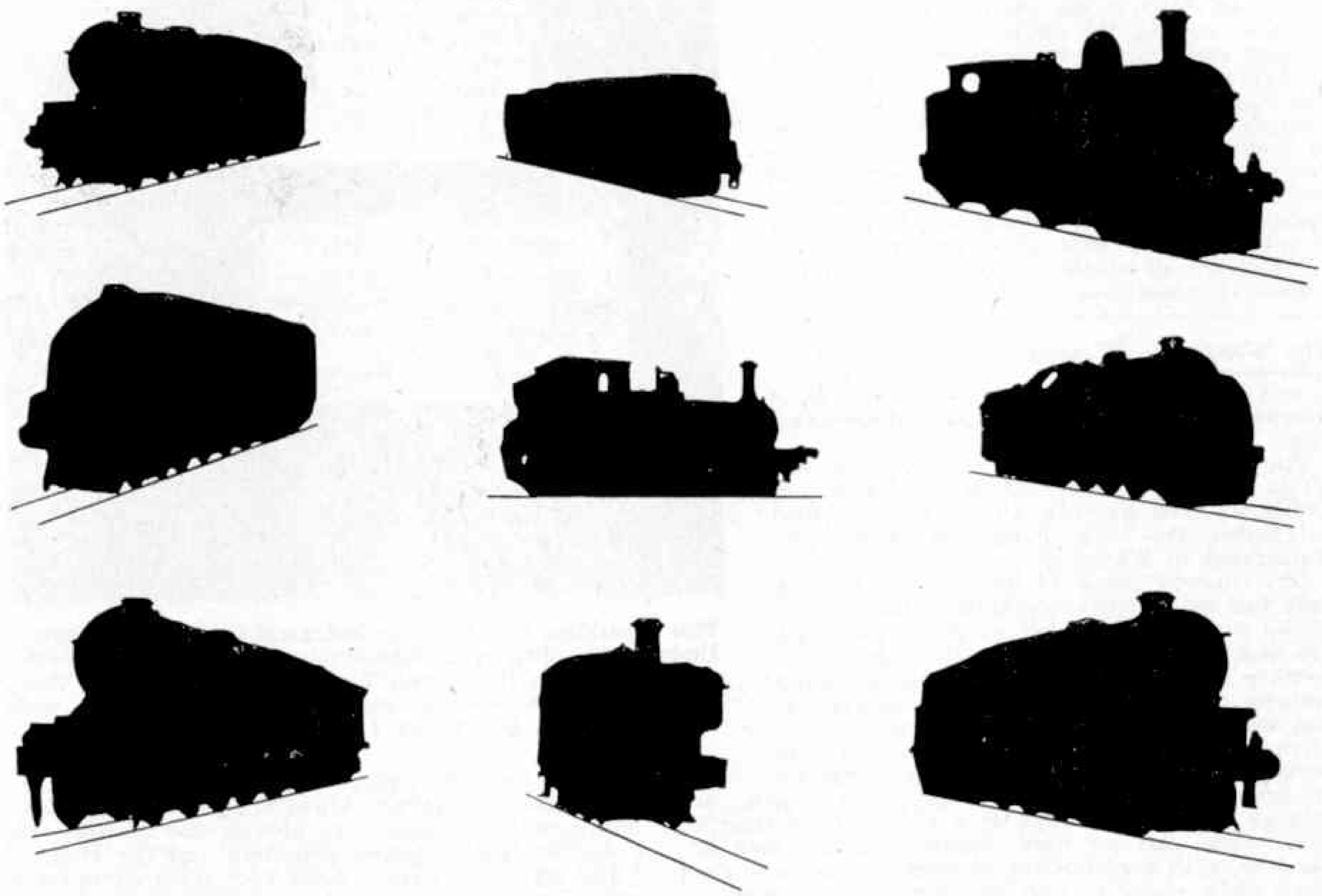
We also started a section across the moat from the outer wall of the building to the other side. This should prove a source of many finds.

H. E. COLLIS (Croxley Green).

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Can You Recognise These Engine Shadows?



This month we are providing *M.M.* readers who are railway enthusiasts with an opportunity to test their knowledge of locomotive types. We invite them to identify the nine locomotive shadows shown above. Some of these silhouettes will be recognised easily, but others may require more careful examination.

When a competitor is satisfied that he has identified all the silhouettes he should make out a list of them, taking each row in turn from the top downward. In the case of each engine he must give the class, wheel arrangement and former owning company.

Write the list on one side of the paper only, and do not forget to add your name, age and full address on the back.

As usual, the competition will be divided into two sections, for Home and Overseas readers respectively. In each of these there will be prizes of 21/–, 15/– and 10/6 for the best entries in order of merit, with Consolation prizes for other good efforts. The judges will take neatness and originality into account in the event of a tie for any prize.

Entries should be posted to *February Locomotive Shadow Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 31st March; Overseas Section, 30th June.

Motor Car Drawing Contest

This month the subject of our Drawing Contest is a modern Motor Car. Any make of car can be chosen, provided the model represented is of recent type, and the car selected can be shown from any angle or in any surroundings. If competitors wish they can use colour in their entries, but judging will be based entirely on the merits of the entries as drawings. The name, age and address of the competitor, with the make of car he has drawn, must appear on the back of each entry submitted.

In each of the Home and Overseas sections there will be two divisions, one for readers under 12 years of age and the other for those above that age respectively. In each of the four sections prizes of 21/–, 15/– and 10/6 will be awarded for the three best entries in order of merit, with consolation prizes for other deserving efforts. Entries must be addressed *February Drawing Contest, Meccano Magazine, Binns Road, Liverpool 13.* The closing dates are: Home Section, 31st March; Overseas Section, 30th June.

Night Sortie from West Malling—

(*Continued from page 60*)

happy and proud of their squadron's record, although they often have to work long hours to keep aircraft in fighting trim, because so few youngsters today seem to realise the value of a free Service training in radar or aircraft engineering.

I saw many other things at West Malling—things which renewed my confidence in the Royal Air Force as the world's greatest fighting Service, and in the ability of its airmen to protect these islands from attack by any force of fighters and bombers in the world. Under the leadership of its Station Commander, Group Captain P. H. Hamley, A.F.C., West Malling is undoubtedly an *elite* Station. It will be better still before long, for its Vampires and Meteors are scheduled to be replaced first by faster, more powerful Venoms and then by the R.A.F.'s superb new super-priority Javelin delta-wing all-weather fighters—the finest aircraft of their type in the world.

The Wanganui—(*Continued from page 63*)

young adventurers only £3 each, a trifling amount to pay for such a thrilling, unforgettable trip.

An adventure of a different type, a solo effort this time, was that of a 41-year old swimmer, Fred Guzwell, who in January 1953 attempted the long, hazardous swim from Tamaranui to Wanganui.

Mr. Guzwell swam 19 miles a day for the first two days, safely negotiating innumerable tricky rapids and braving a vicious whirlpool. He was warned that the next stage of his journey would be definitely dangerous. Many farmers thereabout were seriously alarmed at the risks involved for one lone swimmer. They knew, as he did not, the very real perils of such an undertaking. He would be compelled to brave more difficult and dangerous rapids, at frequent intervals, as well as a 15-mile calm stretch that would call for hard swimming every inch of the way, with very few places to land because of the sheer cliffs, rising to four and five hundred feet on each side.

Mr. Guzwell was not to be deterred from his purpose, but the truth of the prophecies of disaster ahead was fully proved later. For had he not been hauled out of the water by some Maoris, after a particularly gruelling experience, he would most certainly have perished from exposure and exhaustion.

After a good rest, he was determined to push on. Now he faced a desolate 40-mile stretch of the river where he must depend upon his own resources entirely. Clad only in swimming trunks and unable to carry nourishing food or extra clothing, he ran greater risks than ever in this isolated region. One night, shivering in wet swimming trunks, he sought shelter on a rocky outcrop. He tried to build a windbreak of fronds from the giant tree ferns, but the icy blast robbed him of his inadequate shelter and his little fire went out because the wood was damp.

After swimming 79 miles in four and a half days, the "human fish" decided not to attempt the final lap. The cold, stormy weather had been his greatest adversary.

Stamp Collectors' Corner—(*Continued from page 99*)

Any great event is unthinkable without its philatelic celebration, but to British people no stamps are likely to be as popular as these Royal Visit issues. Now go to it, right away, and good hunting.

But to make your collection really interesting, do not forget the very interesting covers, with their special postmarks, which exist in connection with many of the stamps. They are mostly inexpensive.

This separation tree is in the Botanical Gardens, Melbourne. Under it the citizens of Melbourne celebrated the separation of Victoria from New South Wales on 15th November 1850. This photograph and the one on the Editorial page were taken by Flt. Lt. Leslie Hunt, R.A.F.

Those of the 1947 visit of King George VI and Queen Elizabeth to Southern Africa are particularly cheap, and almost any dealer can provide one or two. The Canadian trip of Queen Elizabeth and the Duke of Edinburgh also yielded some nice train cancellation covers, but these are much more difficult to get hold of than those of Southern Africa.

And now just a little tip, or warning. Be careful how you soak off the Royal Visit stamps of Bechuanaland, Basutoland and Swaziland, for the paper when placed in water for any length of time seems to disintegrate.

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Fireside Fun

Lady: "Why is my letter so damp?"
Postman: "Postage due, I guess."

* * * *

Teacher: "George, what are taxes?"
George: "Little nails."

* * * *

Waitress: "This is your fifth cup of coffee, sir. You certainly must like coffee."
Diner: "Yes, I do, or I wouldn't be drinking all this water just to get a little."

* * * *

"There's a man outside, sir, who wants to see you about some money you owe him. He won't give a name."
"What does he look like?"
"He looks like you'd better pay him, sir."

* * * *

The commanding officer asked for a volunteer to accomplish a very dangerous mission—to put out of action a railway station a few miles in front of the lines. A brave soldier stepped forward, and was congratulated by the C.O., who promised him a decoration on the fulfilment of his mission.

An hour later the soldier returned, beaming with pleasure. "I've done it, Sir! The station is quite useless. Look! I've taken all the tickets away!"

* * * *

Old Lady (having travelled through flooded area): "And the rails were under water. I can't imagine how the engine driver found his way."

* * * *

"There goes a fellow who takes the worst view of everything."
"Is he a pessimist then?"
"No, he's an amateur photographer."

* * * *

What is the difference between a comma and a cat? One is a pause at the end of a clause, the other has claws at the end of its paws.

* * * *

Fisherman's Wife: "I want to complain about that fish you brought home yesterday."
Fisherman: "Wasn't it long enough?"
Fisherman's Wife: "Yes, but it wasn't soon enough."

* * * *

Senior: "My, that's a sad looking library."
Junior: "Why? Because the windows have panes?"
Senior: "No, because the books are in tiers."

* * * *

Customer: "I want my hair parted."
Barber: "Well, you have 13 hairs. Which side do you want the odd one on?"

* * * *

Teacher: "As we walk out-of-doors on a beautiful cold winter's morning and look about us, what do we see on every hand?"
Voice from the rear: "Gloves!"

Prisoner: "All I ask for is justice."
Judge: "And you have had it my man."
Prisoner: "You call it justice when I've lost!"

* * * *

A naval officer shouted over the speaking tube to the engine room of a battleship, "Is there an idiot at the end of this tube?"
"Not at this end, sir," came the reply.

* * * *

"Mary, have you seen me cap?"
"Sure, Pat, it's on your head."
"So it is. If you hadn't told me I'd have gone to work without it."

* * * *

BRAIN TEASERS

CAN YOU DO THIS ONE?

A bank clerk placed 1,000 £1 notes in 10 piles, in such a way that he could make up any amount required without untying the 10 separate bundles. How many notes were there in each of the 10 piles?"

* * * *

A SIMPLE BUT TEASING PUZZLE

Can you place eight draughts on their board in such a manner that no two draughts shall be in any one horizontal or vertical line.

If a draughtboard is not available, make a simple drawing of one and use discs of cardboard for the draughts.

(Reproduced by courtesy of "The Commercial Motor").

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

The keys to the solution of our first puzzle are 7 Across, 1 Across and 1 Down, which are connected. When these have been found the complete solution is soon discovered.

1 8	1		2 3
3 7	2	4 9	
	5 1	6	6 3
7 9		1	1

The ten famous men of our second puzzle are Atlee, Churchill, Bedser, Edrich, Matthews, Hutton, Bevan, Butler, Finney and Merrick. Two t's in Attlee? Yes, sorry!

The four moves required in our third puzzle are as follows: five to two, three to seven, one to four and six to eight.

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1 × 1/8	6d. yd.	1 × 1/4	9d. yd.
1½ × 1/8	9d. yd.	1½ × 1/4	1/– yd.
2 × 1/8	1/– yd.	2 × 1/4	1/3 yd.
3 × 1/8	1/6 yd.	3 × 1/4	1/9 yd.
6 × 1/8	2/6 yd.	6 × 1/4	3/– yd.

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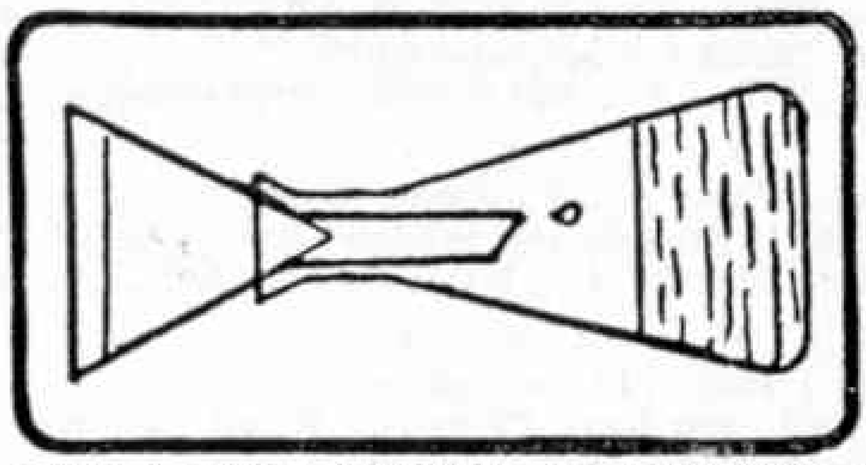

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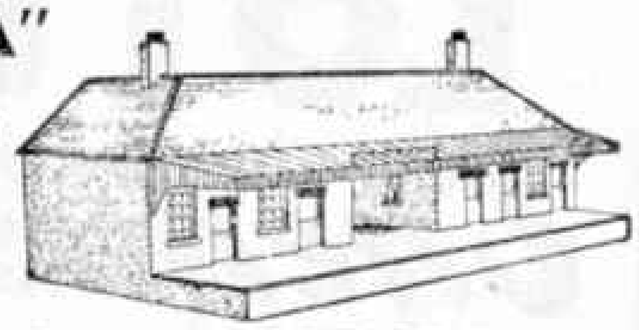

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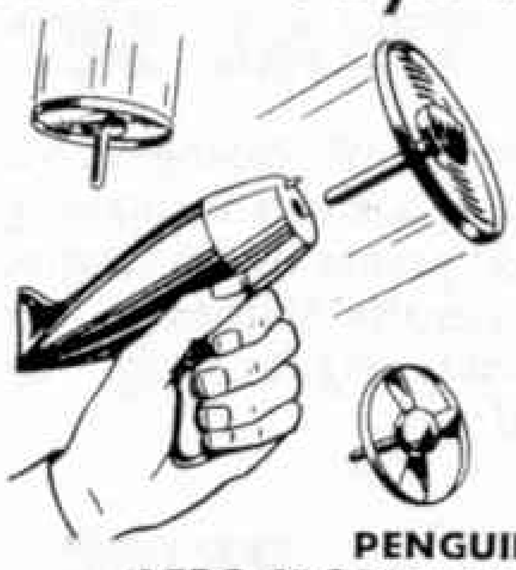

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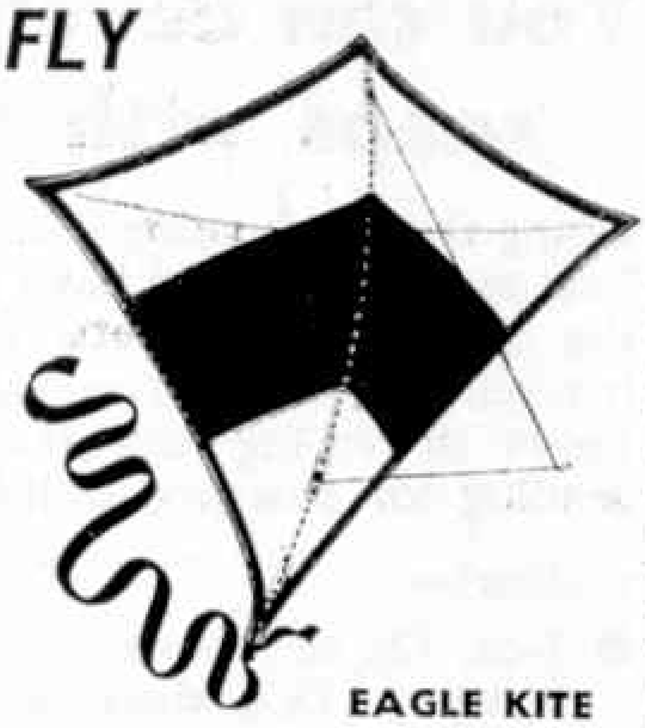

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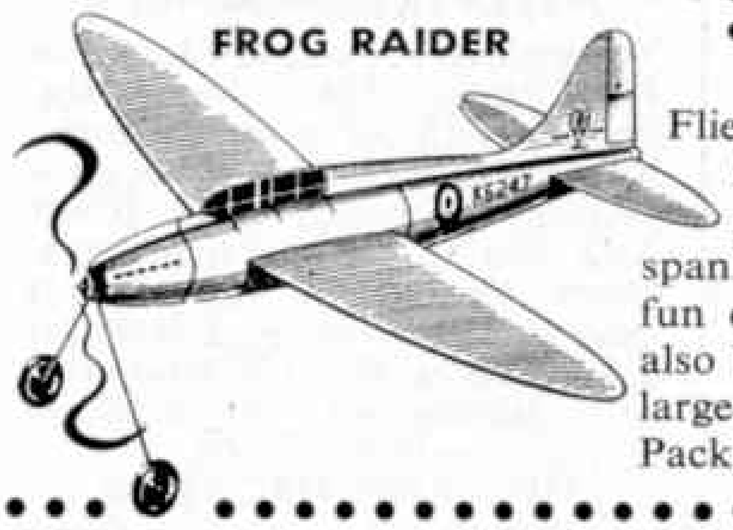

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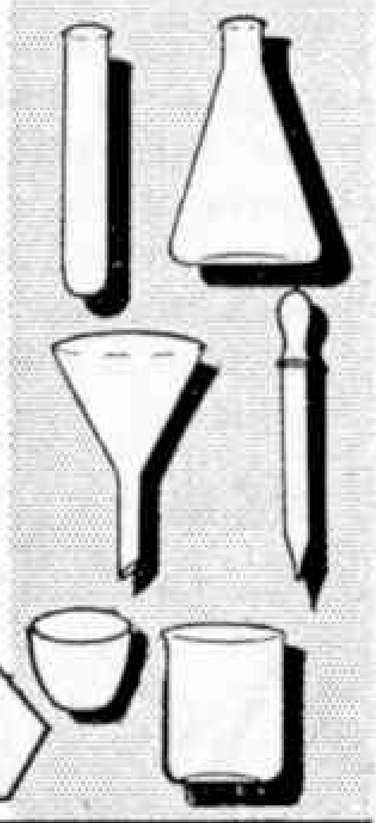

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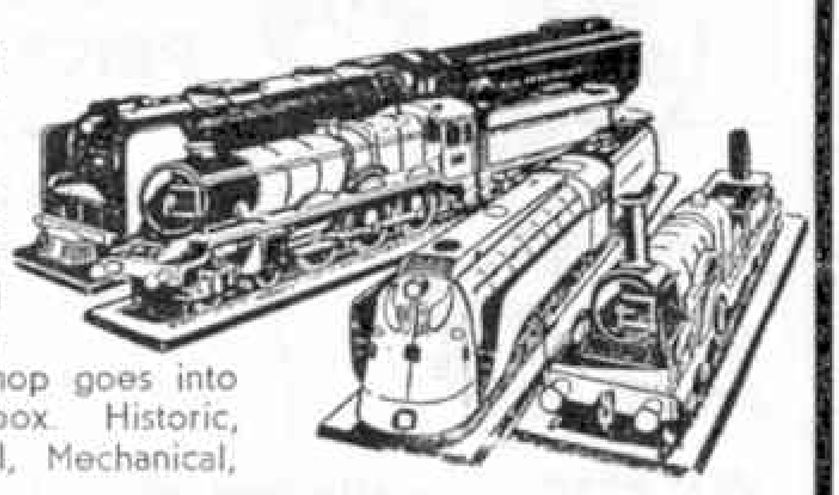

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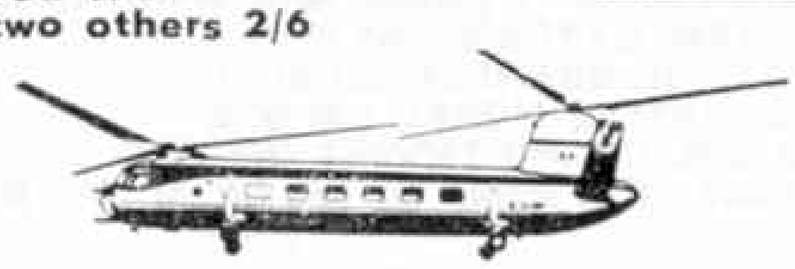

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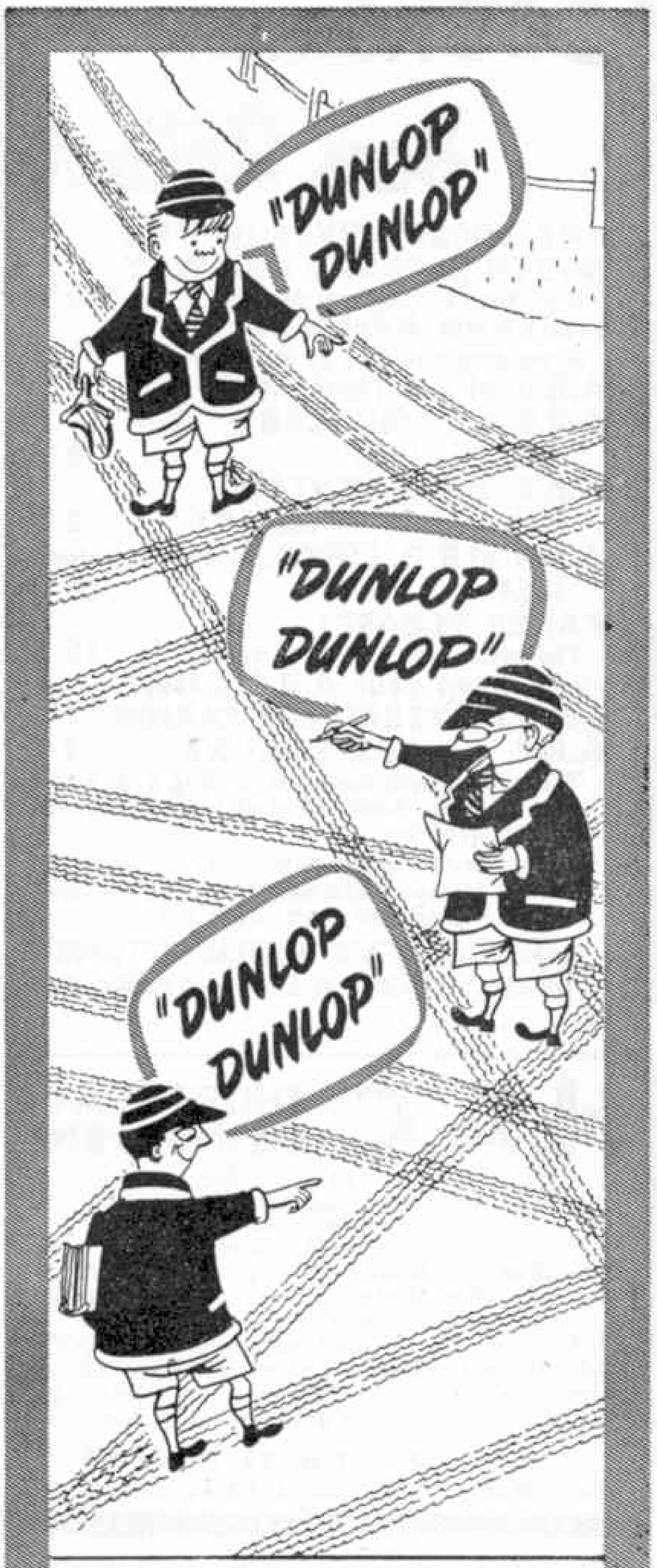

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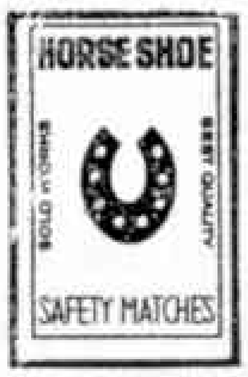

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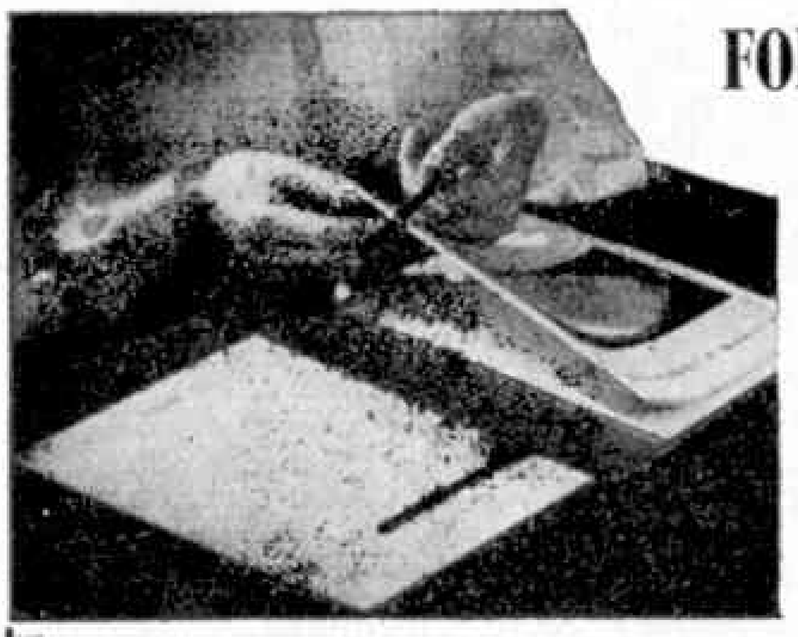

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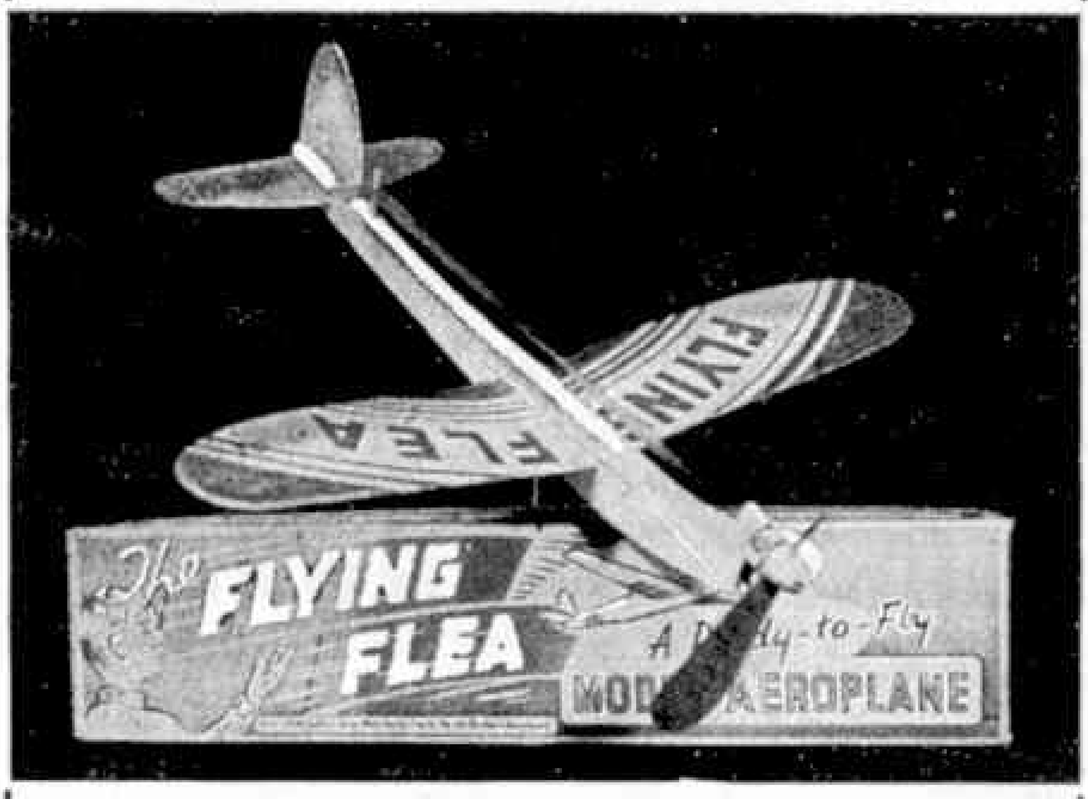

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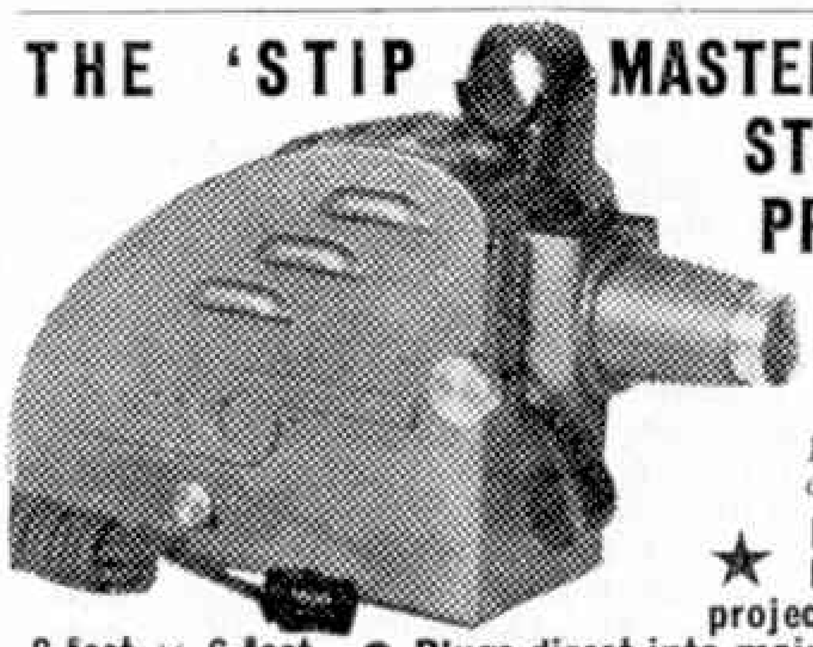

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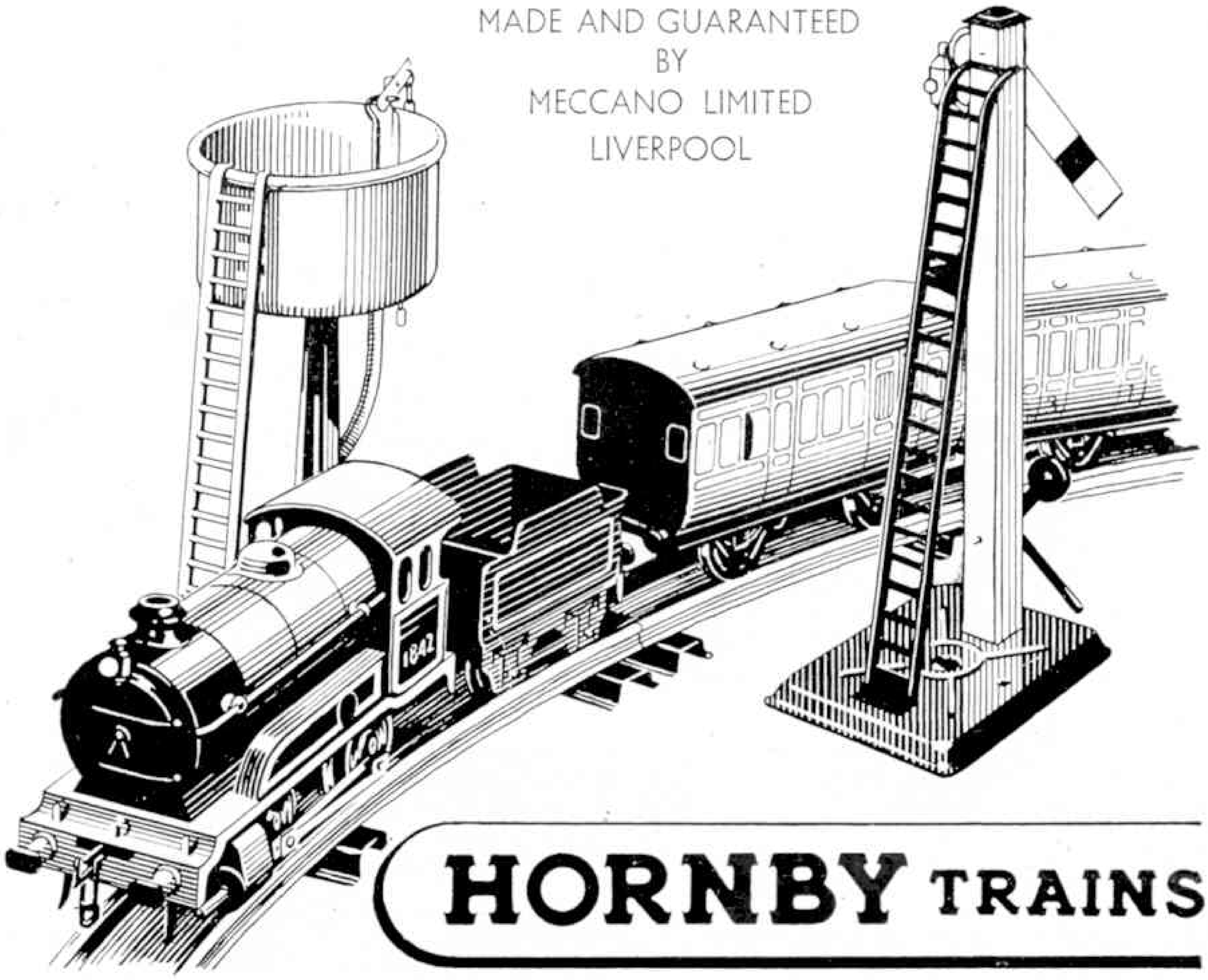

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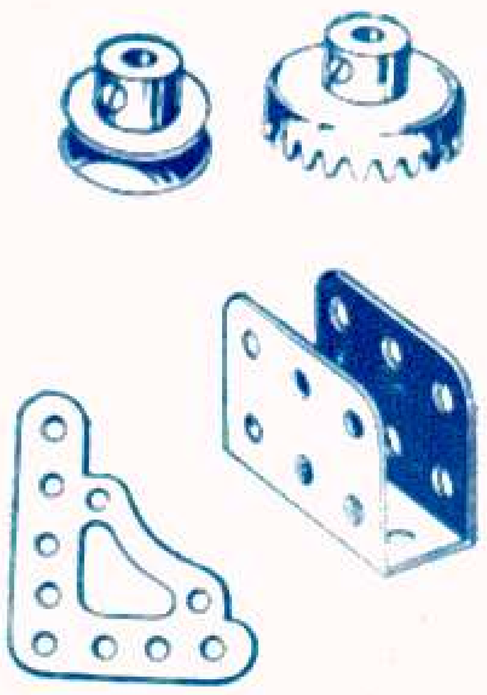

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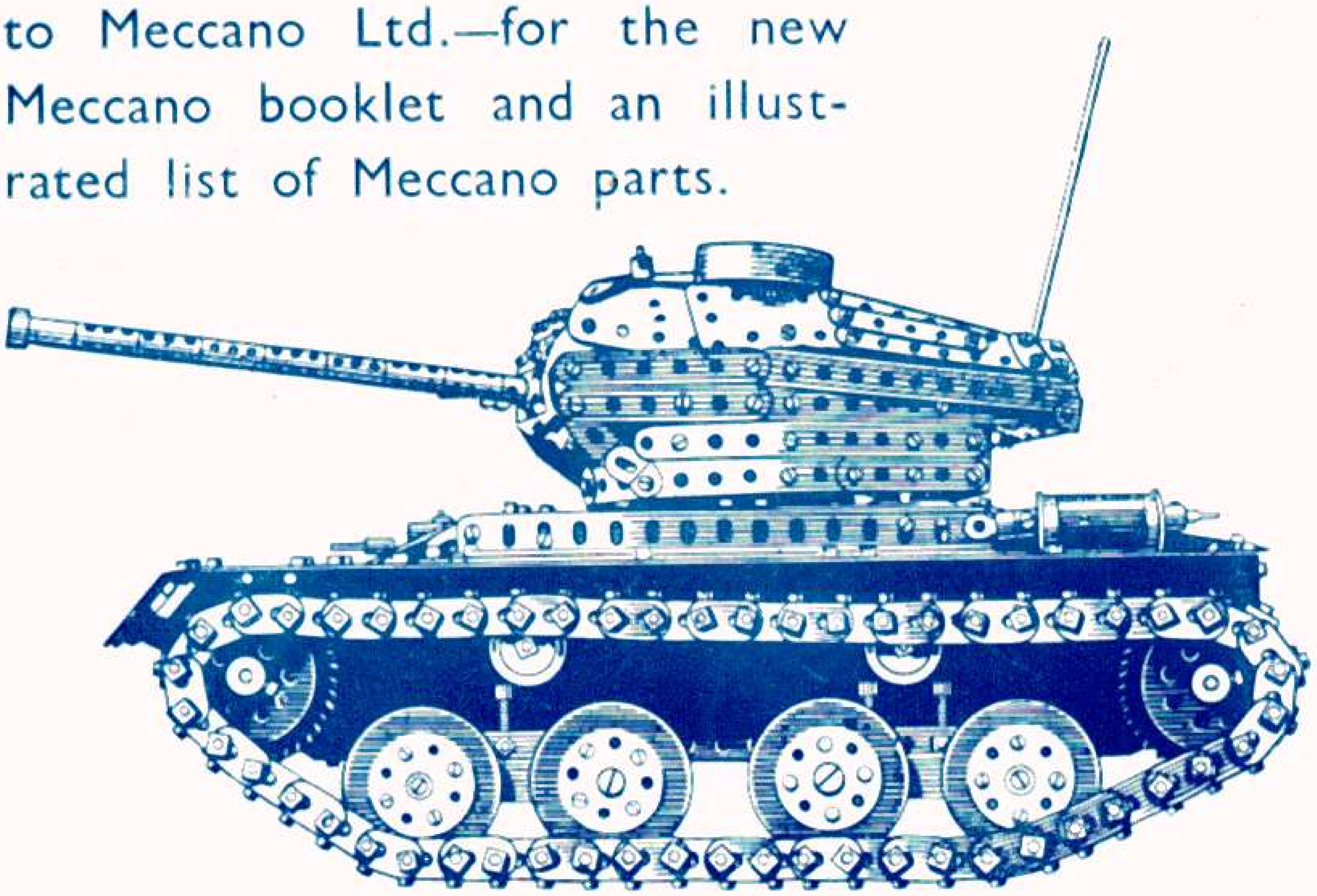

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